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CARDIAC ASTHENIA, OR HEART-EXHAUSTION.

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It is my purpose to describe in this paper a form of weak heart that is not clearly recognized, yet that has features of its own. Weak heart, as it is commonly known, comes from organic causes, such as fatty degeneration, dilatation of the heart, myocarditis; or we notice it after acute diseases, as after typhoid fever, influenza, diphtheria, in which some special poison has affected the circulation; or as the result of more chronic poisoning by tobacco, alcohol, lithæmia, and gout; or of anæmia and deteriorated blood. But this is familiar knowledge, and not the kind of weak heart here to be investigated. I rather desire to examine the kind in which there is for a long period habitual feeble action of the heart, and in which this constitutes the essential and only appreciable disorder.

This heart-feebleness or heart-exhaustion comes from two causes: it is due either to nervous failure or to a weak heart muscle; in some instances to a combination of both. It will for the present serve our purposes best if these cases of essential weak heart from nervous causes are first described, and if we then endeavor to ascertain the signs by which they may be told apart from the instances of muscular weakness.

The affection generally manifests itself in those whose nervous system has been strained by worry or by overwork. It shows itself frequently by a veritable and sudden cardiac collapse, though the causes that have led to this become apparent enough when inquired into, and there have been warning signs. The patient is obliged to stay in bed; all attempts

at sitting up produce a sense of swooning and a vanishing pulse, or there is actual fainting from time to time. The heart's action is feeble, the pulse very small and compressible, and generally increased in frequency; there is a sense of uneasiness in the cardiac region, but very rarely actual pain; the extremities and the nose and ears are cold; the general temperature is somewhat below the norm. The capillary circulation is poor, the skin pale, occasionally injected or flushed; sweating is the exception. The breathing is conspicuously unaltered, although there may be a sense of oppression. "I am out of heart rather than out of breath," was the expression of a very observant patient, who added: "The heart has taken possession of the whole chest." The reflexes are unimpaired or sluggish. The appetite is poor, though there are no marked gastric symptoms; the bowels are constipated. Insomnia may be complained of; apprehension and low spirits are very common. From this state of depression and disturbed circulation the patient rallies but slowly. It is one or two months before he can sit up without inclination to faintness, and months more before he recovers. The course of the disease is as markedly chronic as the onset has been markedly rapid.

Let me cite some illustrative cases.

Case I.—Mr. C., about forty-five years of age, of extremely regular and methodical habits, always very sparing in the use of tobacco, had been in good health barring slight dyspeptic difficulties and with them occasional palpitations, which, however, I had not found to be associated with any marked cardiac disorder until the spring of 1883. At that time he had several matters to worry him, and a sudden death in his family proved a great shock. He broke down at once; the heart's action became very rapid and feeble—so feeble that he had to remain in bed four weeks, and his head had to be lifted even from the pillow by the nurse, for any attempt to raise himself produced faintness and almost cessation of cardiac action, the pulse becoming imperceptible. There was coldness of the extremities, but no shortness of breath. The heart was both irregular and feeble, the first sound very short, and at times a faint, systolic apex murmur was perceived. There was an uneasy feeling in the cardiac region; no actual pain. A marked symptom was cold hands and feet, as was also tremulousness. He slept fairly well. The urine was free from albumin and sugar.

He remained seventeen weeks in the house, and then was taken to the seashore on a bed. During the remainder of the summer and autumn he improved slowly, but never got beyond the porch of his cottage, and was not able to return to his office until nine months after the breakdown. Even then the heart's action was very weak, and it took him two years to recover, all the time being most careful in his diet, in resting, and in the use of occasional doses of heart tonics, prominent among which were at one time digitalis and nux vomica.

Examined by me in May, 1892, I found him in excellent condition, though the circulation was still not strong, for occasionally the hands and feet were cold, and tremulousness manifested itself after meals, but the heart had given him, on the whole, no trouble, and it was absolutely regular in rhythm. He had no gouty symptoms, nor was there more

than very occasional indigestion. The tongue was clean; the pulse was 80; the first sound of the heart weak and indistinct, the second unchanged. The urine was acid, its specific gravity 1022, and it was free from albumin and sugar. He had had no palpitation for between four and five years, but he was still careful not to hurry, and to go slowly up and down stairs. One-fortieth of a grain of strychnia and a few grains of sulphate of iron were at that time given daily, and continued for a considerable period, and now, nearly eleven years after the original seizure, he is well and takes a usual amount of exercise without noticing that he has a heart. The impulse is normal, the first sound of good volume, the pulse 72; indeed, his cardiac symptoms are a thing of the past.

Case II.—Mrs. W., twenty eight years of age, while in Europe two years ago, was placed on a very rigid diet for the cure of dyspeptic symptoms. Article of food after article was withdrawn; she felt herself growing weaker, and her friends noticed that she was becoming paler. In addition, she had had an attack of influenza during the winter, and had been under much worry. The urine was not albuminous, and there was no uterine disorder. Suddenly, in June, a collapse took place; the heart's action became extremely rapid and feeble, threatening to stop altogether, and for several days she had to be fed every three-quarters of an hour, and was also freely stimulated. If allowed to go longer without food, she became utterly exhausted and faint, though she only lost consciousness once. Even the food and stimulant were not sufficient to keep the circulation going, and repeated hypodermatic injections of ether had to be resorted to. She remained in bed for weeks, the least exertion producing faintness and vanishing pulse. There was no sweating, no marked shortness of breath; the extremities were cold, as was the face and nose, and several times the fingers became rigid, as if a convulsion were about to happen. When she was able to get out of bed a dropsical swelling attracted attention, but the urine, though scanty, was found free from albumin. About three months after the original syncope attack, she was able to go to Schwalbach, where the dropsical symptoms yielded, and her health markedly improved, but even now her heart's action is weak. Without cause, or after only slight fatigue, she becomes pale, the heart acts rapidly and irregularly, the feelings of faintness recur. The impulse of the heart is not strong; the first sound is short and feeble, the second distinct; there is no increased size of the heart, no murmur, and no pain. She can walk considerable distances without disturbance, but any worry or fatigue brings on an attack of failing circulation. There are at present no dyspeptic symptoms, but she is constipated; there is no decided uterine disorder, though within a year she has been treated for one. She inherits gout, and at times has excess of uric acid in the urine; for instance, an examination made last November showed a heavy deposit of urates, no albumin and no sugar, the specific gravity being 1030. Nux vomica and occasional courses of iron are the remedies that are chiefly used, besides a full diet.

In this case undoubtedly anæmia played a part, but it did not in the first case, nor in the one I am about to describe.

Case III.—Mrs. B., a large woman of fine physique and strength, who had been overburdened with household matters, began, in the latter months of 1892, to be easily fatigued, had cold extremities, and attacks

like croup, followed by a complete breakdown, which confined her to bed. The appetite was poor, the respiration was normal, the temperature slightly elevated, about 99°; the pulse variable, ranging between 60 and 90, and weak in volume. There was no cardiac murmur; the first sound was short. The urine was free from albumin. Sweating was an occasional symptom. She had severe fainting spells, and grew so weak that she could not raise her head from the pillow without an unpleasant feeling, as if she were going to faint. On strychnia, wine, food at short intervals, and massage, she improved for a few weeks, and then again became so ill that it was necessary to nourish her by the bowel because of extreme distress and palpitation following solid food. After this, under sustained nourishment, whiskey, which agreed with her better than any other stimulant, and arsenite of sodium, a gradual but steady improvement took place, though for several months a tendency to turn giddy and faint if she raised her hand above her head, as, for instance, to light the gas, remained. A trip to the seashore, in May, 1893, proved very beneficial, and on coming home she felt better than at any time since her illness began; the only sign remaining was that the calves of the legs swelled up during the day, the difference between morning and evening being about three inches. Since that time the improvement has been uninterrupted. All treatment, except the massage, has been for some months suspended, and this, too, has lately been stopped. There is no swelling in the legs. The heart's action is about 74. Her color is excellent, and she has a good appetite. No laryngeal attacks have happened for more than sixteen months. She is able to walk a great deal without fatigue, has a brilliant color, and is in better health than she has been for years.

In this case there was the unusual symptom of occasional decided elevation of temperature, though I do not know that it ever exceeded 101°. The color of the face was always good. The attacks, like spasmodic croup, I now believe were of nervous origin, and show how the nervous cardiac malady may coexist with other nerve disturbances or be replaced by them. Another illustration of this we shall presently study in Case V. The tendency to fainting is at times a very marked symptom. It proved itself so in the following instance, which was, however, not uncomplicated, as early in the case a slight amount of catarrhal jaundice also existed:

Case IV.—I saw some years ago, with Dr. Hulshizer, an overworked young fisherman in whom there was irregular action as well as rapidity of action of the weak heart. The attack of cardiac disturbance was preceded by a slight gastric catarrh of at least six weeks' duration, with some yellowness of the conjunctivæ and mild catarrhal icterus. There was no fever. The urine was high-colored, but free from albumin. The heart-beat, when in bed, was from 130 to 140 in the minute, and tumultuous; about every sixth to eighth beat the impulse halted, and there was a disproportion between the pulse, which was about 90, and the heart's action, which was over 130. The first sound was very short and indistinct; the second distinct. There was no murmur and no enlargement. The respirations were not materially increased in frequency. Any attempt to assume the erect position produced greatly accelerated

action of the heart. He had been in this condition for upward of three months, having from one to thirty-five fainting spells daily. Any mental excitement was sure to bring these on; absolute rest in bed largely prevented them. He had no spells at night. Neither occasional mercurials followed by saline laxatives, nor a treatment by digitalis and strychnine, nor by adonidin, one-tenth of a grain four times a day, produced at first any decided effect; but, gradually under a very strict but sustaining diet, the use of a mixture of nux vomica, capsicum, bicarbonate of sodium and rhubarb, prescribed by Dr. Hulshizer, and holding the heart under control by digitalis, a complete recovery took place.

The rhythm of the heart is rarely as irregular as in the case just reported. The heart's action is mostly accelerated, but not irregular. It is very variable, always rises markedly after meals, and is influenced by the slightest exertion. I have the pulse record of a patient lying before me who took it, without my knowledge, many times a day, and in whom, even after he was able to be up, the pulse was 47 in the morning before the bath, and 88 after. In the same case the pulse, taken every hour and a half while sitting quietly in a chair, is noted at 76, 60, 56. Slow pulses, pulses under 60, are, however, quite the exception. The pulse is feeble, very compressible, at times almost imperceptible. The heart's action is influenced by position, but not to the extent to which I have seen the irritable heart influenced.

The physical signs of the heart disorder are very significant. There is no increased percussion dulness, the impulse is feeble, difficult to find, not diffuse. The first sound is short, lacking in volume, and may be obscure or short and valvular; the second is not accentuated. Excluding anæmic murmurs, which are very infrequent, since anæmia does not play an important part in the affection, we may have, though this is also rare, functional apex murmurs of dynamic origin, and these murmurs may be brought out, as shown by Dr. John K. Mitchell (*Transactions of the College of Physicians of Philadelphia*, 1892), by suddenly closing the hand tightly. A sensitiveness to touch in the cardiac region is at times noticed.

That the nervous system is very decidedly affected is evident. Indeed, most cases happen in those who from overwork or worry have had their nervous tone markedly lowered. The breakdown is primarily in the nervous system and not in the heart. The cardiac malady is throughout neurosal rather than muscular. It is very difficult to say to what part of the nervous system influencing the heart to ascribe the disorder. Granting that the central nervous system is affected, I am inclined to attribute the cardiac weakness more immediately to disturbances in the cardiac ganglia than in the centres in the medulla and to the disordered inhibitory influence of the vagus. The changed respiration seems to be against the view of the centres in the medulla being decidedly affected, as the centres for the heart and the respiration are there so closely connected.

The malady is not hysterical, as in the great majority of cases hysterical symptoms are conspicuously absent. But I have known them to come on when the case was of long duration, and I have seen two marked instances of this in men.

It is strange how the cardiac asthenia may be antecedent to or alternate with other manifestations of nerve disorder. We have seen something of the kind in Case III. I will now cite a case in which the cardiac affection preceded diabetes, evidently of nervous origin.

Case V.—Mr. McB., thirty-seven years of age, was seen in the autumn of 1886 with Dr. McFerran. I found him in bed in a state of great prostration. He had not felt very well for some months, and had been anxious, very much overworked, and slightly dyspeptic for some time. On Sunday, on going to church, he nearly fainted and had to return home. Feeling somewhat better next day, he went out, but was soon obliged to return, reaching home with difficulty, and was forced to go to bed; even attempts to sit up in bed produced a sense of faintness and of cardiac uneasiness. When seen, he had been in bed two weeks. The pulse was weak and accelerated, the hands and feet cold, and at times moist with perspiration. There was no increased percussion dulness. The first sound of the heart was short, the second distinct; there was no murmur.

He remained in bed three weeks more, and was altogether eight weeks at home. During all this time the cardiac pain continued, but shortness of breath and palpitation only appeared on exertion; the first sound was short, the second very distinct. He had a good appetite. The urine, repeatedly examined, was found to be normal in specific gravity and in ingredients. There was facial neuralgia.

Seen in November, 1887, he looked pale, but was able to work four or five hours daily; he was sleepy in the afternoons; the hands and feet still felt cold at times. He had a large appetite, and was gaining flesh, but spoke of being thirsty. The tongue was clean, the bowels were regular. The pulse was 110, and still compressible; the first sound of the heart was somewhat valvular; there was no murmur. The urine was normal in quantity, and non-albuminous. Under strophanthus, phosphoric acid, digitalis and adonidin, given at different times, and shower baths, he greatly improved.

I did not see Mr. McB. again until the spring of 1888. He was in good condition, though the heart still palpitated. He remained fairly well all summer, though I believe late in the spring his digestion troubled him a little, and he had some boils. In September of 1888, he was not so well; he was again working too hard. The pulse was 100 and feeble. He had a little flush in the afternoons, but no dryness of skin. Chloride of barium, one-tenth of a grain, was given three times daily. After this he improved, and was not seen until early in December, when he reported that his legs ached, the stomach was disordered, the heart was rapid, varying between 96 and 120, but not irregular. He was losing flesh; the throat had been dry for a few days, and he was very thirsty. An examination of the urine, which had for some time been increased in quantity, showed the presence of sugar, with a specific gravity of 1030. He was placed on bromide of arsenic and an anti-diabetic diet, which was not well tolerated, and

he continued to grow weak, though no real attack of cardiac failure happened.

On December 18th, during the night, attacks which were described as spasms came on, after which he was very dull. On the next afternoon there was a recurrence of the so-called spasms, followed by great drowsiness, and he died in coma with all the signs of acetonæmia.

The disease is one of all ages except childhood and very old age. The great majority of my cases have been in men. I have seen a number of instances among physicians. It is always a long-drawn-out affection.

The diagnosis is not, as a rule, difficult. The evident nature of the causes that have given rise to the heart-wreck, its generally sudden onset, the unembarrassed breathing, the feebleness of the pulse and of the cardiac impulse, are full of significance. The physical signs as well as the state of the respiration and the clinical history separate the weak asthenic heart from the weak heart of organic type, such as the typical ones of this group—fatty degeneration and cardiac dilatation.

From other members of the functional group, as from the irritable heart, it is also distinguished by the history, by the fact that in this malady the patient has had a heart-strain or a gastric or an intestinal affection, that he is able to be about, that the heart's action is generally much more rapid, much more influenced by change of posture, that the impulse is sharp, jerky, diffuse, the pulse quick, small, not so faint, the second cardiac sound sharp and distinct. The tobacco heart resembles the asthenic heart much more closely. Indeed, I am inclined to believe that it is in the main identical, though stopping short in degree. We often observe the same feeble impulse, the feeble pulse —apt, however, to be more irregular and intermitting—respiration but slightly disturbed, a short, valvular first sound, and insomnia and nervousness. I found all these symptoms noted in a patient seen the other day, who smoked daily not less than twelve to fifteen of the strongest cigars obtainable, besides chewing incessantly, and in whom the pulse was 96, the respirations were 20; there was also tremor to such an extent that he could hardly write. It is further of interest to notice that in the experiments made by Hare (*The Physiological and Pathological Effects of the Use of Tobacco*, 1885), as well as by Benham, it is proved that nicotine does not act on the heart muscle, but influences the circulation through the heart's motor apparatus directly, or through the cardio-inhibitory centres in the medulla or the peripheral endings of the vagi or the ganglion of Ludwig.

The most difficult point in diagnosis is to distinguish the weak heart of nervous origin from those much rarer cases of inherent muscular weakness in which, however, no obvious disease of the muscle exists. I made these, at the beginning of this paper, the second group of weak

heart. It is very much rarer than the nervous form, and very much more persistent. The symptoms are the same as regards the feeble circulation, but there is this decided difference: shortness of breath, especially on exertion, is very common, and œdema of the ankles and insteps, passing though it be, is often met with. The physical signs in the heart do not differ, except that the first sign is more toneless, undefined, not so valvular; reduplication of either sound of the heart is much more usual, and so are functional dynamic apex murmurs. I have endeavored to ascertain whether the sphygmograph enables us to distinguish between these two groups of cases, but as yet without satisfactory result. The sphygmographic tracings in the nervous asthenic heart show a line of ascent not high and apt to be oblique, a rather sharp summit, and irregularity in the descent. In the weak muscular heart the upstroke is apt to be straighter, the irregularities in the diastolic period yet more marked. In either, the low tension may give rise to considerable amplitude in the upstroke. I will give the history of these cases of weak heart from weak muscle, which will show its character.

Case VI.—Mr. S., a tall, thin man, of extremely temperate habits, but not of strong muscular system, came under my observation twelve years ago, with a feeble heart muscle. He had been pronounced to have dilatation of the heart, but had never shown any dropsical symptoms. I found the first sound of the heart very feeble, though not valvular; the second distinct. The pulse was rapid and small, and frequently 96. There was no increased percussion dulness. He had a tendency to clamminess of the skin. There was slight shortness of breath on exertion, as well as oppression. He was not a dyspeptic; he had at one time used a great deal of tobacco. The urine presented nothing abnormal, and the eye-ground showed nothing wrong. The pulse is always weak, but he does very well unless he exerts himself too much, when his heart becomes rapid and somewhat irregular, and a feeling of soreness in the cardiac region is complained of. A day or two of rest on his back always makes him feel better. He is very sensitive to the action of drugs. Digitalis does not suit him, nor does strophanthus answer a good purpose; he does best on ignatia amara or on strychnine. Nevertheless, by careful living, and by using from time to time courses of ignatia or strychnine, years have passed, and he is now in better general condition, though still with a weak heart, than when he came under observation in 1881. It has become possible for him to go nine or ten months without treatment; three or four were formerly his utmost limit.

The next case is one in which the cardiac symptoms are still more marked, and in which intermittent mitral murmur and dropsical symptoms due, I believe, to temporary dilatation, were observed. It, too, has been many years under observation.

Case VII.—A spare, active man, now in the early sixties, has been under my observation for fully fifteen years. There is never a time

when the feeble action of his heart is not manifest; the impulse is always found to be weak, not diffused; the first sound is dull and lacking in volume, the second distinct; the pulse is generally about 72, compressible, and at times irregular. Ordinarily there is no shortness of breath, but it occurs on exertion. There is no anæmia, no disease of the kidney, and the digestive powers are fair. A curious feature of the case is an intermittent cardiac murmur, systolic and mitral—not harsh; it may be noticed for a week or two at a time, and then disappears. The patient has had dropsical swelling of the ankles, from which, however, he has entirely recovered. He was once, while travelling, when he had fatigued himself, seized with an attack of cardiac weakness so marked that but for the prompt attention of a physician who was with him he would probably have died. Notwithstanding his weak heart, he does a great deal of active professional work.

The heart-muscle in these long-standing cases is probably flabby. I doubt if it presents marked organic change. It may be that in very chronic cases a slow form of myocarditis exists, but of this I have no evidence. I am, however, certain that dilatation of the heart and insufficiency of the mitral valve may finally come on, and the affection thus become one of pronounced organic kind.

Case VIII.—A young lady of delicate physique, whose case I watched from early womanhood, had always a very weak heart, a feeble impulse, a short, ill-defined first sound, a second sound of moderate distinctness, no murmur, and no increased percussion dulness. She never had much color, but was not anæmic. Walking in a strong wind put her out of breath, as did going up stairs. Everything was done to improve her general health, but the heart-muscle remained feeble. She married, but was childless. Gradually the shortness of breath became a more marked symptom, especially by periods in connection with signs of congestion of the lungs. The heart evidently dilated, the transverse percussion dulness increased, and a systolic murmur became manifest and persistent. Finally dropsical symptoms supervened, and she died with all the symptoms of a mitral disease with cardiac dilatation. She was a long time under observation, and it was six or seven years from the time I first saw her until the weak heart dilated and the signs of organic disease appeared.

These cases will, I think, make evident the manifestations and history of weak hearts where the heart-muscle is essentially weak, and show their course to be different from the asthenic nervous heart. There are mixed cases undoubtedly, cases in which from worry or overwork heart-exhaustion has been superadded to feeble muscle. Here the disorders are very difficult of separation, though even here an accurate history may tell us how much value to attach to either.

In the asthenic nervous heart the prognosis is very good. Under treatment and in time they all recover. There is danger from so-called heart-failure, but I have never met with an instance. I cannot say the same for the heart weak from muscle weakness. I remember one

instance that I saw with a medical friend, in which with only a very moderate amount of bronchitis a sudden and unlooked-for fatal collapse occurred. The epidemic of influenza through which we have been passing has given me the opportunity of witnessing how badly these weak hearts bear the strain of acute disease. In two instances in which I had known of the existence of the feeble heart-muscle for years, life was only saved by the most strenuous exertions; in one, the issue was for days doubtful. On the other hand, in the asthenic nervous heart, certainly when it has once regained its tone, acute disease does not produce fresh heart-exhaustion. Thus I saw, eight years ago, with Dr. Louis Starr, the case of Mrs. H., a middle-aged woman, with weak nervous heart and a tendency to faintness on raising her head from the pillow. The extremities were cold, there was no chest pain and no shortness of breath. She recovered completely, chiefly under the steady use of nux vomica. Four years ago, during influenza, she had an attack of pneumonia, and was very ill, but recovered, and had subsequently, about two years after this, a more limited slight attack, which she bore well, and is now in good health.

The treatment judged most advisable has in part become evident from the cases reported. But it may be well to give a summary of results. For the cases of the asthenic nervous heart, rest in bed is at first essential, and, when they are able to sit up, nothing does them so much good as graduated shower-baths. Massage, too, may be employed, but many cannot at first bear it, and it comes in better at a later stage of the treatment. It is then, too, that Swedish movements may be recommended, and carefully adjusted exercise, such as walking, or gentle horseback exercise, or light gymnastics. These agents can be resorted to from the start, where the weak heart depends on a weak heart-muscle. From Swedish movements that are specially adapted to promote the flow of blood and to strengthen the heart, I have seen in this class of cases great good. The action of the heart has become distinctly stronger and more regular, and in young persons I believe a permanent curative result may be accomplished. The food should always be as nutritious as possible, taken as frequently and in amount as large as the digestion will readily tolerate, and stimulants often have to be resorted to. It is astonishing in what quantities they are borne, and temporarily even required, in the nervous heart; though, for fear of forming a habit, we have to withdraw them as soon as the circulation strengthens. The tendency to constipation demands attention, and is to be remedied by means of diet and of light laxatives.

Among drugs strychnine stands pre-eminent. It is suitable to both the forms of weak heart under discussion. The dose need not be large —rarely exceeding one-thirtieth of a grain three times daily—but it must be continuous. Iron is not called for except when a complication with anæmia exists, or later in the case as a general tonic, and its

tendency to constipate makes it often a doubtful remedy. Arsenic, in the nervous asthenic heart, comes next to strychnine. Its action cannot be explained by its removing anæmia, for it proves to be valuable where the blood-count shows this not to exist. I have the record of one case in which the patient, who also suffered from hay asthma, began its use for the cure of this, and, finding the arsenic very strengthening to his heart, continued it of his own accord for four months, in doses of one-hundredth of a grain of arsenite of sodium three times daily, with the greatest benefit to his general health and a permanent removal of the heart symptoms.

Of so-called heart tonics digitalis is the best, but it is not the certain remedy we might suppose. It is on the whole best adapted to the cases with muscle weakness. Where we give it in large doses the patient should be kept in bed. In a number of instances it does not suit at all. Strophanthus is generally said to be inferior to digitalis. I have used most of the other remedies of this class in different cases. Adonidin and chloride of barium have done me at times good service; cactus and convallaria have been disappointing. The latter I have ceased to use. Caffeine and cocaine are both valuable, but their action cannot be kept up; from cocaine we would run the risk of establishing the cocaine habit. It is, however, very serviceable during urgent symptoms of failing heart. Nitroglycerin is not of much avail, except there be cardiac pain, or in combination with remedies like digitalis, which act more distinctly on the force of the heart. Bromides, valerian, and opium ought to be left to meet special indications of nervous disturbance.

A CASE OF NON-HEREDITARY FRIEDREICH'S DISEASE.

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Isolated cases of Friedreich's disease have been sufficiently rarely recorded to justify the publication of the following example, which I had recently the honor of showing at a meeting of the Neurological Society of London. It is possible that the prevalence of the idea that the disease necessarily affects several members of the same family may have something to do with preventing its due recognition, when only one out of a family suffers. It is, therefore, important to emphasize with an example such as this the fact that the disease does occur in an isolated form. That it does do so is a good illustration of the wisdom of giving a disease a name which implies nothing as to its special characteristics;

for to this kind of case the alternative title of hereditary ataxia for Friedreich's disease is quite inappropriate, unless it is taken to imply future possibilities.

Rose H., aged thirteen years, was admitted under my care to St. Thomas' Hospital on November 1, 1893, on account of difficulty in walking. She had been, in the first place, sent from the country to see my colleague Mr. Battle, on account of lateral curvature of the spine; and he, recognizing the ataxy, the absence of knee-jerks, etc., asked me to take her under my care.

The history of her illness was as follows: When seven years of age she had measles, and from that date she became weak on her legs. After a time she was observed to limp and fall about and she complained of giddiness on standing and walking. She was said to have been always fairly intelligent, but she was not very successful in writing or doing needlework, owing to jerky movements of her hands. Her doctor in the country, who had been consulted about her shortly before she was brought to the hospital, recognized that she had curvature of the spine; but I did not learn whether his attention had been attracted by the nervous symptoms.

The family history was very good and showed an entire freedom from any tendency to nervous disorder. The grandmother was living and well, aged eighty years. Both parents and two brothers and five sisters were alive and in good health. Four of the sisters were older—aged respectively twenty-three, two (twins) seventeen, and sixteen—while one was younger, aged five. The two brothers were eleven and fourteen respectively.

The child herself was well nourished and healthy-looking. She was intelligent, placid and good-tempered, and became a great favorite with the other patients and the nurses.

Her gait was very distinctly unsteady, clumsy and jerky. She walked on the front part of her feet, with her head and the upper part of the body forward, and as she went along swayed from one side to the other, something after the fashion of a sailor's roll. She had a tendency, as she walked, to deviate from the straight line to one side, commonly to the right, but sometimes to the left. The swaying and unsteadiness became specially marked when she turned round to retrace her steps. When she tried to stand with her feet together and eyes shut, she tottered and would have fallen unless supported. The child said that when standing or walking she felt as if her head was turning round.

There were occasional jerky movements of the head and arms. She was not very successful in her attempts at touching her nose with the forefinger with her eyes shut, or in bringing her two fingers accurately together. The knee-jerks were quite absent.

The pupils were equal, of medium size, and reacted well both to light and accommodation. There was no oculo-motor paralysis. The ophthalmoscopic appearances were normal. Nystagmus was at first thought to be absent, but was subsequently observed to be distinctly present in a slight degree when the patient looked outward to either side.

The muscular development was good, and there was no perceptible weakness in any of the movements of the limbs. There was no affection of speech, and none of sensation, and there were no pains and no crises. There was decided lateral curvature of the spine, the upper

curve having its convexity toward the right and involving the upper dorsal vertebræ, while the lower curve had its convexity toward the left and involved the lower dorsal and upper lumbar vertebræ. The various organs were healthy.

With regard to diagnosis, one had to consider locomotor ataxy and cerebellar tumor in addition to Friedreich's disease. Cerebellar tumor could be excluded by the duration and progress of the disease and the absence of such characteristic symptoms as headache, vomiting, and optic neuritis. In differentiating between locomotor ataxy and Friedreich's disease the following points were of importance.

1. The age was the usual one for the latter and would have been very uncommon for the former.

2. The onset after measles has been previously noticed in cases of Friedreich's disease, especially by Dr. Ormerod. No such relation is known to exist in regard to locomotor ataxy.

3. Syphilis is considered by Dr. Gowers as one of the commonest causes, if not almost the only cause of locomotor ataxy. In this case there was no history and no sign of syphilis.

4. The presence of jerky movements of the arms and head, and the swaying unsteady gait were peculiarly characteristic of Friedreich's disease.

5. Nystagmus was valuable as being a fairly constant symptom of Friedreich's disease, while absent in tabes.

6. The absence of lightning pains, anæsthesia, crises, Argyll-Robertson pupil, and optic atrophy, although the duration had been six years, pointed away from tabes.

7. Although the speech was unaffected, this was not of great moment, as the affection of speech in Friedreich's disease is often a late phenomenon and may remain altogether absent.

8. The complication of lateral curvature has been previously observed in cases of Friedreich's disease, but not, as far as I am aware, in locomotor ataxy.

Such were my reasons for my diagnosis. Had the disease occurred in other members of the family it would not have been necessary to state them so fully. I may add, my opinion was confirmed at the meeting of the Neurological Society by Drs. Ferrier, Beevor, Ormerod, and others.

I have not attempted any treatment with drugs, but a very marked improvement was observed after a few weeks' stay in the hospital, probably the effect of good food and a greater amount of repose. The essential features remained, but the incoördination and the jerkiness were notably diminished. Had I given any particular drug, I might have been, perhaps, induced to believe that the improvement resulted from the drug. Such improvement I have frequently observed in hospital in nervous disorders of organic origin. It is on that account that I

strongly deprecate the premature publication of the supposed beneficial effects of new modes of treatment in such cases, of which so much has been heard of late. So far as is at present known, the course of Friedreich's disease is uninfluenced by the administration of any drug.

ON THE MORTALITY AFTER OPERATIONS FOR STRANGULATED HERNIA; THE TREATMENT OF GANGRENOUS INTESTINE, AND THE RADICAL CURE OF HERNIA.

By John Croft, F.R.C.S. Eng.,
consulting surgeon, and formerly lecturer on clinical surgery, to st. thomas' hospital, london.

It may be remembered that in April and May last (1893), under the headings of "Treatment of Gangrenous Hernia" and "Mortality After Operation for Strangulated Hernia," first reports of what was said at a meeting of the Medical and Chirurgical Society of London appeared in the *Lancet* for April 8th, and then a letter followed in the same journal for May 20th. I give the particular references: "Resection of Intestine and Immediate Suture in Cases of Gangrenous Hernia," by Mr. Kendal Franks, *Lancet*, 1893, vol. i. p. 794, and "The Mortality After Operation for Strangulated Hernia," by Mr. Bowlby, *Lancet*, 1893, vol. i. p. 1221.

In the discussion on Mr. Kendal Franks' paper, Mr. Bowlby's remarks included statements on the rate of "mortality after operations for strangulated hernia." This statement was commented on in a leading article in the *Lancet* for May 6th, in the following terms: "Mr. Bowlby stated that, taking all the operations for strangulated hernia performed in St. Bartholomew's Hospital during the last ten years, they showed a mortality of 40 per cent. It would be interesting to know to what this very high death-rate is to be ascribed."

Mr. Bowlby's letter of reply to that part of the leader appeared on May 20th, p. 1221 of the *Lancet*.

After reading the reports of the discussion and the letter, I think the following conclusions will be found correct:

First, that the mortality after operations for strangulated hernia, according to Mr. Berry, as quoted by Mr. Bowlby, was, up to 1884, 43 per cent. on 940 cases treated consecutively at St. Thomas', Guy's, and St. Bartholomew's Hospitals, London; secondly, that in 1891 Mr. Treves, as quoted by Mr. Bowlby, gave the mortality at the London Hospital at nearly 50 per cent.; and thirdly, that on further investigation Mr. Bowlby has found that the mortality at St. Bartholomew's for the last ten years was at the rate of 35.82 per cent.

Since the period at which Mr. Bowlby's letter appeared, I have finished tabulating my operations for hernia, beginning with May, 1866, and ending October, 1892.

The number of cases operated on for strangulated hernia and of which I can obtain notes amounts to 94. These I have arranged into two chief groups, viz., those operated on in pre-antiseptic times, and those operated on with antiseptic precautions. In the latter group there are 44 cases, including 13 deaths, yielding a mortality at the rate of 29½ per cent.

This gives a difference in my favor of 5 per cent.

I imagine that the rate after complete antiseptic operations for strangulated hernia will not be found to vary to any great extent at the several London hospitals. However, the difference between the mortality which obtained before the thorough use of antiseptics, and that which has obtained since the institution of antiseptic or aseptic surgery, is very marked.

My tables include 50 cases operated on in the pre-antiseptic times. The mortality in those cases exceeded 50 per cent., or the rate of mortality ascribed to the practice at the London Hospital by Mr. Treves.

My own personal experience, therefore, shows a reduction of mortality from 50 per cent to 29½ per cent.

It would appear that Mr. Treves, when he described the mortality at the London Hospital as at the rate of 50 per cent., must have included cases operated on without antiseptics.

At St. Bartholomew's the death-rate in the antiseptic period is as high as 35.8 per cent.

I quite agree with Mr. Bowlby when he writes in the letter already alluded to, that "most of the deaths after operations for strangulated hernia are due to exhaustion resulting from compulsory starvation of several days' duration, as well as from continuous retching, vomiting, and pain."

I have analyzed the causes of death in the 13 cases in which the operation for strangulated hernia had been performed antiseptically, and find that 9 deaths occurred from exhaustion from protracted sufferings and old age, that in 3 of these the gut was gangrenous, and that 5 were nearly moribund at the time of operation. None of the other 4 cases died of peritonitis.

An analysis of the causes of death after operation in the pre-antiseptic days, shows that 16 died of peritonitis or exhaustion from protracted sufferings and feeble old age, and 5 from erysipelas or pyæmia.

By operating antiseptically we have practically eliminated peritonitis as a cause of death from operations for strangulated hernia, and we have even got some little distance on the road toward diminishing the number of hopeless cases submitted to hospital surgeons. The good results obtained by antiseptic or aseptic surgery are encouraging patients to submit earlier to an operation which includes a radical cure, and the same good

results are encouraging an improving class of general practitioners to call in the aid of the operating surgeon at a correspondingly earlier date.

The responsibility incurred by the general practitioner when he delays to submit his patient who is suffering from an obstructed hernia, to the operating surgeon, is so great that one wonders at his failing to quickly divest himself of it.

Artificial Anus, and Primary Resection and Suture.—Amongst the 94 cases of strangulated hernia there were 10 cases in which I thought it necessary to make an artificial anus. In each instance the bowel was gangrenous.

A very large proportion, viz., 7, of these occurred in the pre-antiseptic period. In each of these the bowel was in a state of gangrene more or less advanced.

I feel sure that in 4 of these the operation of primary resection and suture could not have been borne, owing to the already exhausted condition of the patients; one died an hour after operation, another two hours after, another twelve hours after, and another survived six days. This last was a woman of eighty years of age, who had been suffering already for nearly a fortnight.

The 3 others in this group of 7 were less unfavorable cases, and I believe that two of them might have borne the operation for primary resection and suture, but that is as much as I could have ventured to predict.

Amongst the 44 cases operated on in the antiseptic period, there were only 3 instances of artificial anus. Not one of these could have borne the prolonged operation of primary resection and suture. The youngest, who had diseased kidneys, sank in eighteen hours after operation, and the other two, who were aged women, succumbed each in a few hours.

It seems remarkable that in the first 50 cases there should have occurred 10 instances requiring artificial anus, and that in the second group of 44 there should have been no more than 3.

If we examine this fact by the light of the chief causes of the condition of the bowel requiring the formation of an artificial anus, we may perhaps find an elucidation of it. The three chief causes of gangrene of bowel in strangulated hernia are, first, acuteness of strangulation; secondly, long duration of the condition before operation; and thirdly, frequent forcible attempts at reduction. The tables cannot be made to throw any light upon the first and third causes, but on the second cause they yield an interesting gleam. In the first 50, the tables show that 28 patients had been suffering for more than two days, and that in the second group of 44 cases the number that had suffered for more than that length of time had dropped down to 19. In the first group 9 had suffered for over four days, whereas in the second group only 5 had so

suffered. I do not say that this is a complete elucidation of the fact I have referred to, but it is sufficient to show that the duration of the strangulation is a powerful factor, though not the only one, in producing the gangrenous state of intestine.

I am conscious that in treating the cases in the second group of 44 I submitted those patients whom I could influence by advice, to operation as early as possible, with the double purpose of arresting the symptoms of strangulation, and of radically curing the hernia.

PRIMARY RESECTION AND SUTURE.—On reviewing the 13 cases in which I resorted to the formation of an artificial anus, it will be observed that all died, and that I did not attempt primary resection in any case. I cannot forbear, however, from taking this opportunity of expressing my sympathy with those who have been endeavoring to improve the methods of dealing with these desperate cases of gangrenous intestine. The number of instances in which English surgeons have practised primary resection for this condition is very limited, so far as I know. Mr. Kendal Franks' table of 220 cases, supplied with his most interesting and able paper to the Medical and Chirurgical Society of London in March last, contains only a few scattered cases belonging to English surgeons of pre-antiseptic and antiseptic times. The surgeons who have provided the largest group in the table are Kocher, Hagedorn, and Mikulicz, and these together supply some 55 cases. Their results are brilliant. I am quite in accord with those who think that successful primary resection and suture is a preferable operation to the primary formation of an artificial anus, which must be followed by a secondary resection and suture; but I cannot agree with those who would settle this question by the mortality statistics (including cases of pre-antiseptic times) of the respective operations. The cause of failure in the cases of artificial anus, made to relieve strangulated hernia, is not in the operation itself or in its immediate effects, but the causes of death are in the conditions which have preceded and accompanied the gangrene.

Gangrenous intestine is not a condition to be treated by a hard-and-fast rule.

One of the first requirements in the consideration of the question of what to do with gangrenous gut is to come to a general understanding of what is meant by gangrenous intestine, for the purpose of the surgeon. For him a portion of bowel which is prospectively dying or dead is gangrenous, though it may not be entirely so or pathologically so. If it is dying and septic, it would be best to treat it by excision and antiseptics. If it is not dying and not septic, then such radical treatment is not called for. Dr. K. Franks thinks that his statistics "show that (*a*) intestinal resection and suture should be the operation of choice in gangrenous hernia, and that (*b*) simple enterotomy followed by artificial anus should

be reserved for absolutely special cases, and should be considered as an exceptional procedure."

This is equivalent to saying that each case must be dealt with on its merits.

On Removing Omentum in Cases of Strangulated Hernia.—I find by my tables that on the total of 94 cases, omentum in greater or smaller quantity had to be dealt with in 35 cases.

In the pre-antiseptic days the mortality in cases in which omentum had been interfered with or removed amounted to 10 out of 15 cases; whereas in the antiseptic period there were 20 cases and only 1 death. In 17 of the 20 cases the omentum had been ligatured and cut away. This shows a marvellous improvement in results.

I am sure that it is wiser to cut off the omentum antiseptically than to run the risk of bruising and even tearing it by pushing it back through a relatively narrow orifice. When in doubt, remove it antiseptically, is, I believe, a good rule.

Should Radical Cure be Attempted in Operations for Radical Hernia?—Among the 44 cases of strangulated hernia operated on antiseptically, I find that in 21 the proceeding was completed by an operation for a radical cure. In 19 the result was entirely satisfactory, the cure being rapid in all cases. In two patients the cure was frustrated by death from a cause overlooked at the time of the operation. One man died from internal strangulation by a band which must have existed concurrently with the hernia, and the other patient succumbed on the thirteenth day, from diarrhœa caused by intra-peritoneal incarceration of small intestine. Peritonitis was not the cause of death in either case.

I would say, that all patients suffering from strangulated hernia should be given the advantage of a radical cure; and I would go farther, and say that all patients suffering from obstructed hernia should be advised to submit to early operation and radical cure.

The 21 cases referred to, include two cases in which the testicle was removed at the same time, one in which the atrophied ovary and Fallopian tube were removed, and several where large masses of omentum were ligatured in segments and cut off.

In treating the tunica vaginalis testis in instances of congenital hernia, I adopted one of two plans: either to make a new tunica by suturing up the portion of the sac attached to the testis, or to trim away the sac close up to the organ. This latter plan gave as good results as the first, and had the merit of economizing time.

Radical Cure of Hernia.—As I have frequently mentioned this subject, perhaps I may be permitted to add a few words with respect to the particular mode of operating of which I have had experience.

I have memoranda of 57 cases in which the radical operation was carried out, 21 of strangulated hernia and 36 of non-strangulated hernia.

I have removed the sac in all cases.

I attached great importance to placing the ligature high up on the neck of the sac. In many cases of inguinal hernia I fastened one loose end of the sac-ligature to the internal oblique and inner pillar of the ring; but I doubted the value of it. In almost all instances of inguinal hernia I brought together the pillars of the ring by sutures, at the same time avoiding any pressure on the constituents of the spermatic cord. I have employed for sutures and ligatures prepared catgut, kangaroo-tail tendon, and silk. I give the preference to silk as more durable and reliable.

In the treatment of the femoral hernia I contented myself with ligature of the sac at its neck and its abscission.

PERNICIOUS MALARIAL FEVER.

By George Dock, M.D.,
of Ann Arbor, Michigan.

In the modern study of malaria, etiology and diagnosis have progressed much more rapidly than pathology. The discovery of the parasites by Laveran destroyed the elaborate and often ingenious explanations of the phenomena of the disease which had been formulated up to that time, and the recognition of the fact that in the earlier anatomical studies the parasites were not accurately observed made it obvious that the histological lesions must be re-studied. Malarial diseases differ from most infectious diseases in that although the infection is always and only in the blood—is, in an old and still used sense, general—yet the clinical features vary to a marked extent in different cases. It must be clear that in the new study of malaria many single observations must precede a complete survey of the subject. In the following pages I present the results of the study of a limited material. I have devoted most space to the study of a single case which offered unusual advantages in several respects, especially in the previous health of the patient and the short and severe course of the infection. The older writers had a very extensive list of varieties of pernicious malaria for the purpose of expressing briefly the salient features of different cases. As usual in such cases, one name does not always suffice, so that in my own case one might be in doubt whether to call it hæmaturic, remittent, gastric, or dyspnœic. Looked at from the modern standpoint, we should ascribe chief importance to a feature the older terminology did not include, viz., the rapid destruction of red blood-corpuscles. I have given the history of this case rather in detail. The rest of my material

was derived from a case of algid pernicious malaria without unusual features, and two cases of malaria of milder type in which death occurred from accidental rupture of the spleen.[1] I have also used the liver of an old case of malaria preserved in the Pathological Institute of the University of Leipzig.

The points of special importance exhibited in this case are the enormous development of the parasites and consequent anæmia and melanæmia; the parenchymatous degeneration and inflammation in liver, kidneys, and stomach; the thrombosis in various organs; a remarkable condition of the blood in the abdominal fatty tissue, and finally, the micro-chemical examinations of the tissues.[2]

Acute malarial infection; remittent fever, emesis, dyspnœa, hæmaturia, and delirium; death on the seventh day, from failure of respiration. Post-mortem: Melanæmia; thrombosis; necrosis and inflammation of liver, kidneys, and stomach; hyperplasia of spleen and lymphatic glands, etc. G. P., aged twenty-three years, born in England, emigrated to America in 1890. Landing in Galveston, Texas, he worked for a few weeks on vessels in non-malarial localities. In August, 1890, he took a position on a steamer plying between Galveston and San Jacinto, Texas, a place where the most severe forms of malarial disease occur. P. made weekly trips to San Jacinto, remaining there from two to four days, and, the weather being warm, slept on deck, close to the shore. Up to October 25th, P. was in perfect health, never having been ill in his life. On the day named, on the trip to Galveston, he felt pain in the abdomen, and slight nausea. These symptoms passed away, and he slept well the following night. Next day, about 10 o'clock A.M., he had headache and a slight chill, followed by fever and sweating. From that time he thought he had fever constantly, but without chills and sweating. On the 27th he vomited without obvious cause. Appetite remained fairly good. On the 30th, on account of the constant fever and increasing weakness, P. sought admission to the hospital. He had taken no medicine but a cathartic pill, which had a mild effect. At 5 P.M. the same day the following *status* was taken:

"Man of medium size, well developed and well nourished. Mind clear, but slightly excited. Complains of constant severe pain in the frontal region and in the back and legs. The skin is pale and dry. There is no jaundice. There are recent herpes vesicles on the lips. The tongue is swollen and indented, with a gray coating. At rare intervals patient vomits bile-stained, mucous, watery fluid. The bowels are confined. Splenic dulness extends from the eighth rib three fingerbreadths beyond the costal margin. The splenic region is sensitive to pressure; the spleen can be felt, but is very soft. There is marked tenderness in the epigastrium. The liver is not distinctly enlarged. Temperature (5 P.M.), 100° F.; pulse, 88."

[1] University Medical Magazine, vol. i. p. 469.

[2] The later examinations were made in the Pathological Laboratory of the University of Leipzig, and I wish to thank the Director, Professor Birch-Hirschfeld, for giving me the freedom of the Laboratory and for many other kindnesses, and to thank the assistants, Privatdocent Dr. George Schmorl and Dr. Richard Kockel, for valuable assistance. I am especially indebted to Dr. Schmorl (whose reputation for unexcelled work in photo-micrography is well established) for the negatives from which the accompanying figures have been made.

The examination of the blood, which at once revealed a severe malarial infection, will be described later.

During the next twelve hours the patient took thirty grains of quinine, in solution, by the mouth, without symptoms of cinchonism.

The patient's condition remained about the same until noon the next day, when a sudden change for the worse was observed. The pulse was weak, from 150 to 160 to the minute. Severe and uncontrollable vomiting set in. Neither medicine nor food could be retained, and even attempts to swallow bits of ice or carbonated water caused violent retching. Later delirium came on, at first mild and voluble, later somewhat wild. The temperature, which had ranged between 99° and 101°, rose suddenly, reaching 104.8° at 3 P.M. It then fell slowly to 103.6° at 6 P.M., and remained stationary until death. During the afternoon dyspnœa appeared and became more and more severe, so that if the patient attempted to rise he would fall back exhausted. Finally, at 8.15 P.M., breathing ceased, the heart beating for several minutes later.

On the day of admission, through some oversight, the urine was not saved. The next day none was passed, so that at 6 P.M. a catheter was introduced and about 30 c.c. of urine obtained. This was yellow, with a pinkish tint; showed a marked turbidity with rapidly falling brown granular sediment. Albumin was present to the amount of one-tenth the bulk on standing. The sediment was made up of numerous casts, most of them of large size, but a few were narrow and short. All were of brown color. The larger ones were made up of epithelial cells, leucocytes, well-preserved red blood-corpuscles and "shadows," and brown and yellow detritus granules. The small casts were sometimes similarly made up, sometimes smooth and waxy-looking. There were also many free red blood-corpuscles and renal epithelial cells, and oxalate and uric acid crystals. The epithelial cells were brown, but otherwise of normal appearance.

The *autopsy* was made twelve hours after death. The skin was pale and slightly jaundiced. Rigor mortis was marked.

On removing the calvarium, the membranes showed unusual anæmia. The sinuses contained tough gray clots. The brain was anæmic, not œdematous, of firm consistence. The white substance had a faint grayish tint, otherwise there were no macroscopic alterations in the brain or other parts as far as the beginning of the cord. The latter was not removed.

The heart was of normal size, the muscle anæmic, pale yellowish-brown, soft. In both ventricles were firm fibrinous clots of pale grayish color.

The lungs were in the inspiratory position, very anæmic, otherwise of normal appearance.

The spleen was greatly enlarged, weighing 675 grammes. The capsule was smooth in general, but had soft, easily separable adhesions to the peritoneum in the region of the eleventh rib. The tissue was very soft, having the consistence of thick cream. Section was dark red or chocolate colored, Malpigian bodies not distinctly visible.

The kidneys were of normal size, the capsules stripping readily. The cut surface was anæmic, pale grayish-red in the cortex, pale red in the pyramids. The adrenals of normal appearance.

The bladder contained 50 c.c. of urine having the same microscopic and macroscopic and chemical peculiarities as that examined during life.

The stomach was greatly distended and contained two litres of greenish fluid. The mucous membrane was very thick, of dark-gray color, and covered with tough, adherent mucus. In the fundus were a few small ecchymoses.

The upper part of the small intestine showed nothing abnormal, but in the lower part of the ileum the Peyer's patches and solitary nodules were enlarged and dark gray. The colon showed no change.

The liver was slightly enlarged, the surface smooth, dark greenish-gray. Section showed a similar color; the tissue was very anæmic, cloudy, slightly swollen; the acini not distinct. The gall-bladder and ducts showed no abnormality.

The pancreas was anæmic and gray.

The mesenteric glands were enlarged, soft, and œdematous. The fat in the abdomen was remarkable for its gray color. The muscles in general were dry and dark red.

The bone-marrow (vertebræ, sternum, and ribs) was dark red, but anæmic.

Pieces of various organs were placed in absolute alcohol. Fresh preparations of various tissues were examined in normal salt, and in Müller's solution.

The examination of the blood. During life the blood was examined in the ordinary way, by taking a drop from the cleaned finger-tip and examining, at the bedside, with a Zeiss $\frac{1}{12}$ in. oil-immersion lens. The notes made at the time have been controlled recently by the study of cover-glass preparations. The latter were fixed by heat, and stained with Loeffler's methylene-blue, or hematoxylin, and eosin.

October 30, 5 P.M. Blood-drop of normal appearance. Red and white corpuscles in normal proportions. Parasites are present in enormous numbers. Every field (containing sixty to eighty red corpuscles) contains a number, never less than two or three, often as many as twelve, fifteen, or eighteen. In one field of a dry preparation I have found forty. Frequently two parasites, sometimes three, can be seen in one corpuscle. The parasites are from one-quarter to one-third the diameter of a red corpuscle, when at rest, but usually they are in active amœboid motion. Some of them when at rest show a ring or seal-ring form, and contain extremely small, amorphous, brown or yellow pigment grains. Most of the organisms are roundish (not ring-shaped) at rest, appear homogeneous, and contain roundish dark-brown or black pigment masses in or near the centre. In some of the larger organisms, about half the diameter of a red blood-corpuscle, the earliest indication of segmentation can be seen, apparently, in the appearance of radial lines or streaks, or of small, dark areas around the pigment. Very rarely bodies can be seen which seem to represent the earliest stages of the crescents. These are long or oval, with scattered or central pigment grains, have very little motion and a different refraction from the others. In stained preparations small, round, deeply staining areas can often be made out in the organisms. In the fresh blood there were very few free parasites, and no crescents or flagellate bodies. There are a few polynuclear leucocytes with pigment, either in fine grains or larger, roundish, darker masses.

31*st*. 12 M. Blood dark-red. The red corpuscles are often irregular in outline or look as if broken, but without a tendency to crenation. The leucocytes are relatively slightly increased. Parasites numerous.

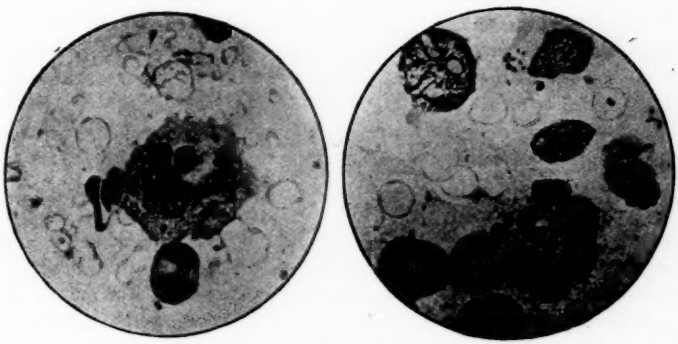
They are smaller than at the last examination, with no pigment, or very few small yellowish-brown granules. Pigmented leucocytes are more numerous than before.

5 P.M. The parasites are in the same stage as at this time yesterday, but are even more numerous. During the examination marked leucocytosis suddenly appeared, the proportion of white to red corpuscles being one to five.

A count of leucocytes shows the following proportion: large lymphocytes, 20 per cent.; small lymphocytes, 12.5 per cent.; large polynuclear, 22 per cent.; small polynuclear, 40 per cent.; transition and large mononuclear, 5 per cent.; eosinophile, less than 0.2 per cent.

It is necessary to explain that by the term "large polynuclear," I include not only the larger forms of that class, such as are found in healthy blood, but also large cells like the phagocytes in Figs. 1 and 2,

FIG. 1. FIG. 2.



FIGS. 1 AND 2.—Blood from the finger-tip fifteen minutes before death. Phagocytes with parasites in the stage just before segmentation, and pigment from fully segmented organisms. In the upper part of Fig. 2 is a phagocyte containing spores and a pigment-ball. Hæmatoxylin and eosin. Apochromatic obj. 3 mm., oc. 4. × 720.

the nuclei of which are usually simple but of irregular outline. Many of these cells, especially those with pigment, had in fresh blood a peculiar, hyaline appearance; sometimes their bodies were evidently broken down.

Actual mitotic figures cannot be found in the leucocytes, but there are numerous cells having nuclei suggesting division, probably amitotic. (See the smaller cell in Fig. 1.)

An attempt to count the corpuscles was not successful. The blood was very dark and rather thick. With the Thoma-Zeiss instrument I counted, in several attempts, about 6,000,000 red corpuscles per c.mm., with variable proportions of leucocytes.

About this time nucleated red corpuscles appeared in the blood, but were only discovered in the stained preparations. They are all normoblasts with deeply staining nuclei, and are present in the proportion of about one to a thousand red corpuscles.

From five o'clock until eight the blood was examined continuously, and it was possible to follow the development of the parasites during

that time. They became larger and less active, reaching finally a diameter equal to or slightly greater than half that of a red corpuscle. During the later phases the pigment became more and more closely aggregated, forming a roundish mass in or near the centre of the parasite. This stage can be seen in Figs. 1 and 2, taken from a preparation made at 8 P.M. In a preliminary report on this case (*Medical News*, May 30, June 6, 1891), I said that segmentation forms were not to be found in the peripheral blood. More extensive examinations have shown me that this is not so. In a dried preparation of finger blood taken just before death, stained with hæmatoxylin, I find five sporulation forms with central pigment free in the plasma, and four enclosed in phagocytes. (In Fig. 2, in the leucocyte at the upper part of the field, there is a group of spore-like bodies with a pigment-ball near by. This I have not counted as one of the four, all of which were more perfect.)

EXAMINATION OF THE TISSUES.—The alcohol hardening gave very good results in preserving the parasites. With suitable stains the organisms can be demonstrated with a clearness which leaves nothing to be desired. In order to show the relations of the parasite to the red blood-corpuscles sublimate fixation would no doubt have offered advantages; but for the parasites and the other tissues, alcohol can be recommended.

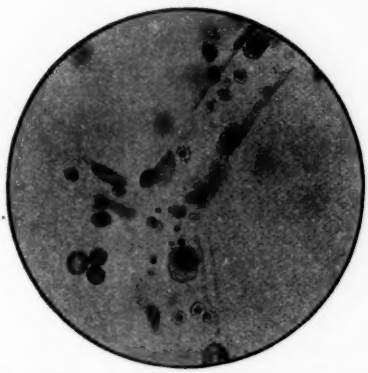
In staining, all kinds of nuclear dyes give good results. Alum-carmine stains the segmenting bodies and fully developed spores very well, and is useful in showing the relation of the pigment to the tissues. Hæmatoxylin, alone or with eosin as a contrast stain, I found on the whole most satisfactory. Methylene-blue gave good results in recently hardened tissues, but was not quite so useful in staining material long in alcohol. Figs. 3 and 4 show methylene-blue stains. Loeffler's solution was used, the sections remaining in it several hours and being rapidly washed in absolute alcohol and cleared in cedar oil. Safranin, fuchsin, and other aniline dyes did not give such good results as those mentioned.

In the following description I have limited myself, as far as possible, to the most important changes, leaving out many details, but omitting nothing essential.

Brain. In the brain the findings vary in different parts, as is usual in malaria. Immediately after the autopsy I examined the smaller vessels in the brain by pulling them out, with the membranes and plexuses, and examining by various powers. In this way it was easy to find the parasites, lying in rows or masses in the vessels. I paid special attention to the condition of the vessel walls and the possible presence of obstructions. But although I examined hundreds of vessels, evidence of thrombosis was scanty. Once I found a mass of parasites and leucocytes obstructing a small artery at its bifurcation. On the whole, the arterial and capillary walls were of normal appearance. In hardened sections the most important alterations are found in the cortex, where the smaller

vessels are frequently full of, sometimes distended by, infected blood-corpuscles as shown in Fig. 3. (It must be remembered that only one plane is shown in the photograph; the capillary contains many times more than those which appear.) The smaller vessels in the cortex often show an excess of leucocytes, and in some of them there are thrombi containing parasites. The changes just described, though marked in some parts, do not appear on the whole to be so extensive as in some other reported cases. In the white substance the changes described are very uncommon. The larger veins are frequently distended with blood, though usually with few parasites. Thrombi are frequent, though rarely causing total obstruction. Many of the leucocytes in various parts of the brain contain pigment, sometimes parasites. The endothelial cells often contain minute glistening globules resembling hæmoglobin, and in the fresh preparations free globules of that kind were very

FIG. 3.



Capillary from brain cortex (3d left frontal convolution). Each pigment-ball is in the segmented body of a parasite, but the organisms do not show distinctly. Methylene-blue. × 720.

common, though probably partly of post-mortem formation. In the central ganglia, the crura, pons, and medulla, the smaller vessels are empty; the larger veins show unusual fulness, but parasites are much less frequent than in the cortex. The upper part of the cord is anæmic, but a few infected red corpuscles can be found. The parasites in the brain are in the later stages, either in the fully segmented form or the spores lying loosely together. The brain and the cord, so far as examined, show no perceptible alterations of the tissue elements (alcohol hardening?).

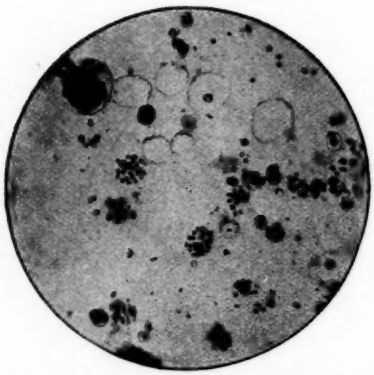
Heart. The muscle fibres show marked fragmentation, the transverse striation is well preserved; the nuclei of the muscles are frequently swollen. In the small arteries and capillaries are moderate numbers of parasites and of pigmented leucocytes. There is an increased proportion of leucocytes in the vessels, especially in the capillaries.

The clots from the ventricles consist of fibrin masses and leucocytes, with few red corpuscles. The large mononuclear leucocytes, or large lymphocytes, which are hard to distinguish in blood hardened *en masse*,

are increased. There are also many large leucocytes with irregular nuclei, containing pigment grains and larger masses. The red corpuscles in the clots rarely contain parasites. Pigment and parasites are present in about the same proportions in clots from right and left ventricle, the proportions varying in different parts of the same clot.

Spleen. In scrapings of the spleen examined after the autopsy, parasites were found in enormous quantities, as shown by Fig. 4, from a cover glass preparation. The parasites were for the most part in the later stages, but in some places, in cover-glass preparations, small bodies can be seen, apparently in the red blood-corpuscles, which from their size and appearance seem to be bodies in the earliest stage of endoglobular existence. In fresh or cover-glass preparations the conditions

FIG. 4.



Splenic juice twelve hours post-mortem. Complete segmentation, and also several parasites in earlier stages, but with pigment massed in one ball. In sections the spores are never so numerous, being usually from ten to fifteen, whereas smear preparations show twenty or more. It would appear from this that division takes place in more than one plane. Methylene-blue. × 720.

as to pigment and other peculiarities are so much like those in the hardened tissue that a description can be omitted. Sections of the spleen show moderate hyperplasia of the lymphoid tissue with an intense hyperæmia which separates widely the elements of the pulp. Everywhere in the parenchyma, but varying in different parts, are enormous numbers of parasites. In some places every blood corpuscle contains one. They are almost all in the later stages. In consequence of the hardening, no doubt, the smallest forms, as found in the splenic blood and already described, do not show so well as in the cover-glass preparations. In the lymphoid tissue parasites occur at times in the capillaries. Here, too, are occasional pigmented leucocytes, but pigment grains are never to be seen in the lymphoid cells. Everywhere in the pulp there are large cells with relatively small nuclei. The bodies of the cells are irregular in outline, their nuclei rarely round, but usually bean-shaped, crescentic, or triangular. The cells always contain bodies of the following kinds, in varying number and proportion:

1. Pigment in fine yellowish-brown grains, or in larger darker balls, like those in ripe parasites. Sometimes numbers of these balls can be seen apparently fused together. 2. Parasites with round bodies and central pigment, or segmented bodies. Sometimes the parasites can be recognized as being in the remains of red blood-corpuscles, sometimes not. In either case the parasites may be in a round clear area in the body of the phagocyte. 3. Leucocytes, with or without pigment. These are not uncommon, and sometimes one or two small or large lymphocytes can be seen in a large phagocyte. 4. Yellow, very minute globules resembling hæmoglobin. The number of enclosed bodies in these cells is sometimes almost incredible. It is not unusual to find as many as thirty of the large pigment-balls in one cell. Frequently they are so fused together as to make counting impossible. As many as twenty parasites may be seen in one phagocyte. The large splenic veins contain numerous pigmented leucocytes, and also many parasites, both in the red blood-corpuscles and free, as fully developed sporulating forms.

Lymph glands. The enlarged mesenteric lymph glands are hyperplastic and slightly hyperæmic. The capillaries contain pigmented leucocytes, rarely parasites.

The bone-marrow examined fresh contained many mature parasites and sporulation forms, either free or in leucocytes having the characteristics of macrophages. In the bone-marrow were unusually large numbers of the hyaline leucocytes already described.

Liver. The liver shows important changes of various kinds. There is a moderate degree of necrosis of the liver cells, shown by failure on the part of the nuclei to take stains, and a ragged and broken-down appearance of the protoplasm. In some areas without necrosis the nuclei are swollen. In a few places the protoplasm of the liver cells stains deeply with nuclear dyes and has an opaque appearance, resembling minute areas of coagulation necrosis. The necrotic areas are not symmetrical, nor have they any special localization, but are scattered over the acini. The portal connective tissue contains large numbers of small cells in its whole extent, most marked along the vessels of small or medium calibre. The cells are mostly round, of medium size, with round nuclei and narrow rim of protoplasm. A few are larger, with paler nuclei. These collections do not extend into the acini, but are sharply circumscribed laterally, though sometimes of great length.

All the intra-acinous capillaries contain pigment granules, which are so numerous as to simulate an injection when seen by low amplification. Examined more closely, one can see that the pigment is partly free in the plasma, partly in endoglobular parasites, and partly in leucocytes. The hepatic veins and portal veins frequently but not uniformly contain blood with parasites and pigmented leucocytes. The branches of the hepatic artery, when they contain blood, sometimes show pigmented leucocytes, but rarely parasites. The liver cells never contain pigment like that in the parasites. Almost everywhere, but especially in the portal zones, the cells contain numerous small yellow granules, with a more greenish tint than the usual liver pigment, which also occurs sparingly in the cells. Similar granules can also be found in the endothelial cells.

Kidneys. The capsules of Bowman are unchanged, but the capillaries of the glomeruli show loss of epithelium in some places, in others increase of nuclei. In various parts of the cortex there are small, ill-defined collections of small cells, usually near small bloodvessels. In

various parts of the labyrinths the epithelial cells do not take nuclear stains; their protoplasm is granular, or sometimes greatly swollen or broken down, and the lumen of the tubules filled with granular material. In the pyramids, especially in the larger tubules, there is a remarkable desquamation of the epithelial cells. The lumina of the stripped tubules contain isolated epithelial cells, or large casts made of cubical cells, yellowish-brown detritus granules, leucocytes, and red blood-corpuscles. In the casts the cells stain well. The large bloodvessels are empty. The glomerulus capillaries contain parasites in moderate numbers, the capillaries of the labyrinths very few. In the pyramidal vessels, on the contrary, there are large numbers of the organisms, reminding one of the capillaries in the brain cortex or liver. Pigmented leucocytes occur in these vessels in moderate numbers. In the renal epithelial cells the characteristic malarial pigment does not occur, and in the glomeruli the pigment appears not to be in the cells. Many tubules in the pyramids contain greenish-yellow granules, like those described in other organs, and similar granules can occasionally be seen in the endothelial cells of the bloodvessels.

The right supra-renal body contains, in a large vein in the medulla, a thrombus having a structure like those in other organs.

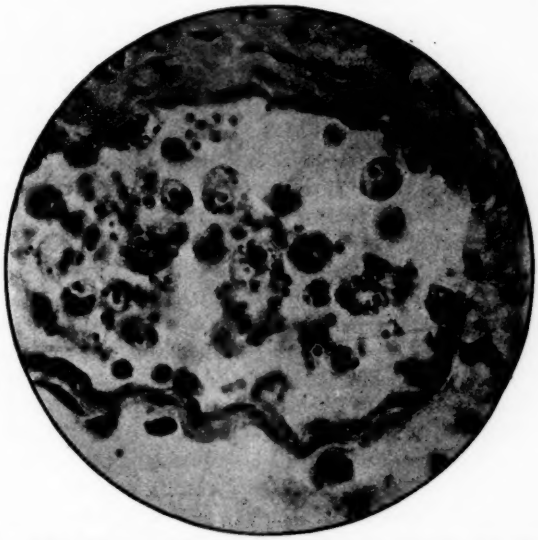
Stomach. The bloodvessels of the submucosa are all distended with blood which often presents increase of leucocytes. A large vein contains a thrombus, almost filling the lumen, made up of leucocytes and an unusually large amount of fibrin. In the mucosa there is marked small cell infiltration between the tubules, and in the submucosa there is an infiltration along the small vessels. The intertubular capillaries contain large numbers of parasites and pigment masses. Very often there is complete filling of several adjacent capillary meshworks. Most of the pigment shows no trace of parasite (probably the effect of post-mortem maceration). In the large vessels, and in the thrombus, the conditions as to parasites, pigment, and phagocytes are as in other similarly affected parts. In a large vein I found one cell resembling a large splenic phagocyte, with several enclosures. It was in the middle of the lumen of the vein.

The slate-colored parts of the intestine show conditions like those in the stomach. The pigment showed especially well in teased fresh bits, where the capillary network in the villi was perfectly marked out by pigment.

Pancreas. The pancreas contained a few parasites in the capillaries, but no other changes of note. In examining that organ, however, I was struck by the large quantity of pigment in the loose fat around it, and was led in that way to examine the abdominal fat as far as possible. Besides the fat around the pancreas, I had preserved a good deal adherent to the adrenals and the stomach. Everywhere in this tissue I find the same peculiarities. In the first place there is an unusual fulness of the bloodvessels, resembling that in the bodies of persons dying of valvular lesions of long standing. There were, besides, interstitial hemorrhages. In all the blood in these parts, including the hemorrhages, there are quantities of parasites such as are found nowhere else except in the spleen. Every cross section of a capillary shows one or more parasites, and where the capillaries are cut lengthwise every one of the closely packed blood corpuscles can be seen to contain an organism. In the smaller veins the numbers are enormous, but in the larger veins the

blood appears quite normal. Many of them are in the later stages, as in the other organs, but often small bodies can be seen in the red blood-corpuscles, taking a faint stain and containing very minute pigment grains, which appear to be bodies in an early period of development. In the larger veins are large numbers of leucocytes, and often thrombi, made up of leucocytes in a coarse fibrin network. The leucocytes contain pigment and parasites (see Fig. 5). They are large polymorph-nuclear cells, with comparatively small nuclei, usually near the edge. They are not so large as the macrophages in the spleen. The parasites

FIG. 5.



Vein in abdominal fat, showing the phagocytes. In many leucocytes the bodies of organisms can be seen lying in vacuoles. In one parasite segmentation can be seen to have begun. There are many parasites in free red blood-corpuscles and in the plasma, some of which are segmented, but these do not show distinctly in the photograph. Hæmatoxylin. Apochromatic obj. 3 mm., oc. 4. × 640.

often lie in clear spaces in the protoplasm of the cells. The organisms in the phagocytes are all in the later stages of development, including that of separation of the spores. The latter cannot be recognized in the figure, but one parasite completely segmented can be recognized. The leucocytes do not exhibit a marked tendency to approach the walls of the vessels. The figure shows the nearest approach to that I could find, but neither here nor elsewhere is there evidence of phagocytism on the part of the endothelial cells.

CLASSIFICATION OF THE PARASITES IN THIS CASE.—As I have stated in my former communication, the parasites encountered in this case seem to be identical with those described by Marchiafava and Celli

and their pupils as the small plasmodium,[1] or the parasite of summer and autumn in Rome, and to which more specific names have been given by other writers. They agree, so far as one can determine by descriptions and without actual comparison, in the size of the fully-developed organism, their short cycle (about twenty-four hours), their lively motion, and the peculiarities of the spore figure and of the pigment (see Fig. 4).

The Parasites Before and After Death.—In this case I hoped to be able to get some light on the question of the development of the organisms in the dead body. During the last hours many of the organisms were in the latest stages—that is, there were round bodies with central pigment, and segmented bodies. Had these continued their development they should all have disappeared within a few hours. Besides these there were many small bodies, almost uniform in size, and either entirely without pigment or containing only one or two of the finest grains. As the autopsy was made just twelve hours after death, it was to be expected that if further development had taken place only the half-grown parasites would be found—that is, small ones with scattered pigment grains. This, however, was not so. In blood from different organs examined at the autopsy, and in cover-glass preparations and hardened tissue, there are enormous numbers of sporulation figures and a few unsegmented but, judging from their size and pigment, almost ripe organisms (see Fig. 4). In splenic and in peripheral blood there are very small bodies, slightly larger than spores, apparently in the red blood-corpuscles. These are most probably the earliest intracellular forms. In one place only, in the red blood-corpuscles in the abdominal fat, are there small pale bodies (stained preparations) containing minute pigment grains. There seem to be plasmodia slightly more advanced in development than the spore-like ones in the spleen, and correspond approximately to what one would expect to find at that time in the finger blood had the process continued.

It seems, then, that the growth of the parasites was checked almost completely very soon after the patient's death. Whether this was due to lack of oxygen or to altered temperature, or to other causes, we can only conjecture.

Remarks.—When we endeavor to trace the relation of the infecting organisms on the one hand to the clinical phenomena and anatomical changes as found post-mortem on the other, we find, even in a comparatively simple case like the foregoing, many difficulties. It is worth while to consider some of the possible sequences of cause and effect.

[1] The use of the term plasmodium as the generic one for this organism is so much greater than that of all proposed substitutes taken together, that objections seem useless. The fact that the word is used as a technical term in biology can hardly lead to confusion, unless perhaps in the very beginning of investigations in the literature of malaria.

As the most direct result of the action of the parasites, we must consider a destruction of red blood-corpuscles and a corresponding anæmia (oligocythæmia). It is easy to understand the mode of production of this when we remember that the development of each parasite involves the destruction of a red blood-corpuscle. The extent of the destruction must vary widely in different cases, in many mild tertians being less than one per thousand in forty-eight hours, in some quartans even less. In a case like the one now reported, blood-counts are unreliable. I explained the high count in this case (6,000,000 per c.mm.)—which was paralleled in another case of malarial remittent, with a temperature of 106.2° F.—by a concentration of the blood mass, which, in view of the continued high temperature, the rapid breathing, the continual vomiting, and failure of absorption of water swallowed, is not difficult to understand. For reasons equally clear, estimations of the hæmoglobin in the acute stages of malaria have a possible source of error. The most plausible explanation of the blood after malarial attacks is that it is in a condition similar to that in post-hemorrhagic anæmia, with reduction of the number of red corpuscles and hæmoglobin in equal proportions, and during recovery the count increasing more rapidly than the hæmoglobin, with nucleated red corpuscles appearing. The early appearance of the nucleated red corpuscles is shown in my own case.

An accurate estimation of the proportion of parasites to corpuscles could not be made in my case. In finger blood, proportions of one to five or six were not uncommon, and sometimes the proportion was even greater. But in other preparations there were smaller numbers of parasites. In many internal organs, however, the relative numbers of parasites must have been very great. It is probably safe to assume that in the last day there was a proportion throughout the blood as a whole of not less than one to five, involving the destruction of that proportion of red corpuscles in twenty-four hours. This is not incredible, for other observers (Mannaberg, *Die Malaria-Parasiten*, p. 154) have reported cases in which the proportion could not have been less.

Such a proportion indicates an enormous power of development on the part of the organisms. It is not enough to assume that a large number of parasites have been taken in, which has sometimes been supposed to be the cause of pernicious attacks. It is known that in ordinary cases of malaria destruction of a part of each new generation of parasites takes place. In a case in which this is not great, or is absent, the natural increase of the bodies would soon produce a number equal to that in even so severe a case as the one now reported.

The peculiar conditions leading to unusual development of the spores may have some connection with the greater resistance to quinine present in such cases.

Clinically, the anæmia in my own case may be said to have been

expressed in the dyspnœa (which also probably had other causes) and the thirst. In another case of pernicious malaria I had a striking example of the latter symptom. The case was one of algid pernicious, with a temperature of 95° to 97° F., in which the patient begged piteously for water. This has been supposed to indicate an internal high temperature. Asking the man, whose mind was perfectly clear, if he had fever, he said "No, but I am so dry." In a few hours he was dead, asking for water (which he got, and could swallow and absorb) to the last; but the temperature in internal organs, half an hour after death, was only 98° F.

But anæmia does not explain all the clinical phenomena of this or any other case of acute malaria. In my own case there are lesions in abundance, but it is not easy to ascribe to each one its part in the production of the symptoms or the relation of the parasites to the lesions.

There is a probable effect of the parasites aside from the anæmia which we must consider, namely, the formation of toxic substances. In the growth of the parasites and in the digestion of the red blood-corpuscles it can hardly be doubted that toxic substances are produced. What these are or how they act we cannot say. It is reasonable to suppose that the characteristic phenomena of the paroxysms are largely due to the action of the hypothetical poisons on the nervous system. It might be urged that this theory of the paroxysms, which is of course not new, is weakened by the fact that in the more severe malarial infections some of the phenomena are not so strikingly exhibited as in mild cases. It is to be remembered, however, that in the severe infections substances may be formed in unusual quantities which have an inhibitive action on certain phenomena of the paroxysms. Moreover, it cannot be doubted that temporary or permanent disposition has much to do with the clinical features of malarial paroxysms.

The most important factor, however, in the causation of the atypical attacks of malaria is perhaps the inflammation which is so marked in certain organs. It is not difficult to see how the difference between an intermittent and a remittent, or even continued fever, might depend on the existence in the one case of a gastritis or hepatitis.

The possibility of an action of toxic substances on the nervous system cannot profitably be considered in connection with my own case. The method of hardening employed makes it impossible to say positively that there were no degenerations of the nervous tissue. Some nervous symptoms, like delirium, were not so marked in this case as often happens in pernicious malaria, even in less severe cases, but the possibility of toxic substances acting on the centres of the medulla must not be forgotten, the more so as we cannot find vascular changes to account for the dyspnœa and other symptoms (respiratory death?) which might have been wholly or in part of medullary origin.

The necrotic alterations in certain other organs can hardly be looked upon as anything but the results of toxic substances. I refer especially to those in the liver and kidney. The alterations in the stomach were probably also originally toxic, but in the case of this organ other influences may have assisted. The other changes in these organs, vascular fulness, small-cell infiltration, etc., would seem to have been partly reactive, due to the necrosis, though they might also be ascribed with some reason to the same causes as those which produced necrosis.

Some peculiarities of the parenchymatous lesions deserve emphasizing. In the liver the areas of interstitial inflammation and necrosis do not coincide. The infiltration does not seem to involve, therefore, a preceding necrosis. It is noteworthy that judging from the forms of cells there is no tendency to suppuration.

But while this one case, in which other possible causes seem absent, shows that malaria can give rise to interstitial hepatitis, examinations in other cases indicate that the process does not always occur. In the liver from the case of algid pernicious there are small areas of necrosis, but no infiltration. In a case with death from ruptured spleen there is neither necrosis nor infiltration in the liver.

While the alterations in the cortex of the kidney seem toxic, the changes in the tubules of the pyramids are so different that it may be questioned whether they are not due to local circulatory disturbances, especially in view of the condition of the blood in the capillaries of those parts. No matter how caused, the desquamation gives a simple explanation of the hæmaturia, an explanation which of course cannot be applied to other cases without confirmatory observations.

The parenchymatous changes in the stomach and the similar but less severe alterations in the intestines, as is well known, do not occur to the same extent in all cases. In the algid case mentioned before there was marked chronic gastritis, but no recent change. It may well be that the anæmia accompanying the chronic disease had some influence on the process.

It is difficult to estimate the precise anatomical and clinical importance of thrombosis, which occurred most frequently in the brain cortex. In the latter it is not so marked as it has been apparently in some other reported cases. Though it probably had some connection with some of the nervous symptoms observed, it does not seem, from its localization, as if it could have had any bearing on the more important symptoms, especially the dyspnœa, the temperature, or the pulse.

Certain phenomena of malaria are due probably to the peculiarities of the localization of the organisms. This, from the little we know of the subject, certainly varies in different cases. In my case it was most marked in the spleen, liver, brain, and kidney, and last, but not least, in the abdominal fat. The localization of the malarial parasites, like that

of other blood parasites, is opposed to our ordinary ideas of the circulation, but the fact is more remarkable in malaria in that the parasites are for the most part within the passive red blood-corpuscles. That blood parasites in general tend to accumulate in parts where the circulation is slow is well known, and that infected or diseased red blood-corpuscles tend to accumulate in certain organs with slow circulation, like the liver and spleen, is also known, but these facts do not explain the whole matter. In the case of the abdominal fat the hyperæmia would offer favorable conditions for stagnation, but the cause of the hyperæmia cannot be easily explained. It is, perhaps, necessary to say that the abdominal congestion was not due to chill, as there was none. Still less could it be of post-mortem origin.

Another fact which seems to have some connection with the peculiar localization of the parasites is the remarkable distribution of the leucocytes. The proportions of the various forms of leucocytes indicate that there was an unusual production of those cells, which may be explained by an irritation of lymphoid tissues, but owing to the irregular distribution, efforts to count them were even less successful than in the case of the red corpuscles. They are present in greatly increased proportion in the capillaries, and often, but not always, where parasites are especially numerous. They are also present in remarkable numbers throughout the congested abdominal fat, as shown by Fig. 5.

The latter facts might be interpreted as indicating that the leucocytes go where there are the greatest numbers of parasites. But many of the increased number of leucocytes in those places are cells that do not act as phagocytes, so that it seems more rational to assume that local conditions of the circulation, leading to stasis, are the important factors in the accumulation of both parasites and white corpuscles.

Phagocytes and Phagocytosis.—In this case the enclosure of parasites is extraordinarily frequent, as a reference to Fig. 5 will show. In blood taken from the finger at 8 P.M., 10 per cent. of the leucocytes are phagocytes, there being large and small polynuclear cells in the relative proportions of 6 and 4 per cent. In the finger blood the phagocytes seem to be leucocytes such as occur normally in blood. In the liver, the spleen, and bone-marrow there are larger cells. The most remarkable are those which occur in such large numbers in the spleen. They are similar to, but usually larger than the large cells found in the spleen in other infectious diseases, especially typhoid fever and certain cases of pyæmia. The origin of these cells is obscure. From their appearance an endothelial origin might be supposed, but nowhere in my own case is there evidence of such an origin. Notwithstanding most careful search I can find no sign of phagocytosis in endothelial cells *in*

situ, which is claimed by Metchnikoff[1] and his pupils as being common in many conditions, including malaria. There is also no swelling and no apparent desquamation of endothelial cells. In G. P., I cannot find pigment in the liver outside of the vessels, but in cases of longer duration I find it occasionally in the cells of Kupffer, claimed as of endothelial origin by Metchnikoff,[2] but not even in those cases in the endothelial cells in the inner surfaces of the vessels. This question is discussed from another point of view later.

In regard to the enclosures of the phagocytes, the commonest is pigment, especially pigment of the form which is present when the parasites undergo segmentation. Next in frequency are parasites. These are in the later stages, especially the stage of segmentation. It seems to me, though the point is a difficult one to decide, that the bodies in the phagocytes, on the whole, are in an earlier stage of development than those not enclosed. This may be due to the fact that those free in the blood continued to develop after the others were swallowed. But as parasites when swallowed in an active condition continue to show signs of life for some time, as many observers have noticed, it seems more likely that the enclosed parasites in my case were dead or dying when swallowed. In other words, I think that the work of the phagocytes in such cases is not essentially different in its objects and method from that exhibited in regard to any inert foreign material in the vessels. Certainly if phagocytism were directed to plasmodia alive and active, we could never have such a large number of parasites in the blood as occurred in this case, for in the beginning even the circulatory phagocytes must be present in greater number than the parasites, while the endothelial cells also have good opportunities for acting on them. Once the parasites are paralyzed or killed, either by drugs given for the purpose or by something formed in the body, there would be nothing left for certain cells to do but enclose them for further disposition.

THE MALARIAL PIGMENT.—Since the excellent work of Arnstein,[3] we have known that the malarial pigment originates in the red blood-corpuscles, and so might contain iron, but at present we do not know whether it really does contain iron, although various writers make positive statements pro and contra. For years, on account of its color, malarial pigment has been called melanin. But as the real nature of various other so-called melanins has been made known, there is a tendency on the part of chemists to restrict the use of the word to certain pigments of known composition, and probably different from malarial pigment, though pathologists have not shown a tendency to observe the distinction. Nothing short of an ultimate analysis will enable us to properly classify or name the malarial pigment; and such an analysis,

[1] Leçons sur la Pathologie comparée de l'Inflammation.
[2] Loc. cit., p. 163 et seq.
[3] Virchow's Archiv, 1874, Bd. lxi.

with suitable material, should not offer insuperable obstacles. The micro-chemical tests so far available cannot decide as to the presence or absence of iron, as the results of various observers ought to show. Knowing the impossibility of settling the question, but hoping to arrive at some explanation of the contradictory statements of others, I made an extensive series of examinations, and feel that the results are worth recording.

In order to test various methods, I used the liver and kidney of a case of pernicious anæmia from the collection of the Leipzig Pathological Institute. All the specimens had been hardened in strong alcohol. They were cut in paraffin and fixed on cover-glasses by heat. They came in contact with iron only in the process of cutting.

I began with ammonium sulphide, but had to give it up as unsuitable. It gave the iron reaction in certain of the yellow globular particles resembling hæmoglobin, in the vessel walls, and in the large phagocytes of the spleen. It slowly dissolved the malarial pigment, decolorizing a section completely in from twenty minutes to an hour. Afterward there was a black amorphous precipitate, due probably to the evaporation of the reagent. The solubility of the pigment in ammonium sulphide had been observed before.[1] Evidently with a reagent so powerful as ammonium sulphide but little could be expected, and after determining the facts mentioned I took up the Berlin and Turnbull's blue tests. In using these I found after trying various methods that the modification used by M. B. Schmidt[2] gave the best results. It is as follows: A two per cent. solution of potassium ferrocyanide is poured in a dish and pure hydrochloric acid added in the proportion of one per cent. The sections are placed in this, and in case the reaction is positive soon become more or less blue. It is advisable to follow the reaction under the microscope with a low-power objective. After the maximum intensity of color is obtained the section should be washed in distilled water and can then be mounted or can be stained and then mounted. For staining I use lithion carmine, though, of course, any contrasting stain could be used. If the staining be done first, as is sometimes recommended, no matter how carefully the solutions are filtered, a number of minute cotton fibres and more or less granular material will adhere to the sections and give the iron test, which is extremely delicate.

The pigment in the parasites, including the finest grains, never gives the blue reaction. The same is true of free pigment, or pigment in phagocytes which can be recognized as of parasitic origin. This, of course, does not prove that iron is not present, but only that it is not present in a form which responds to the test.[3] But in the course of the observa-

[1] Kiener: Cited by Mannaberg, Die Malaria-Parasiten, p. 26.

[2] Virchow's Archiv, Bd. cxv. p. 402, note.

[3] See the excellent remarks of E. Neumann on this subject, Virchow's Archiv, Bd. cxvi p. 318,

tions I obtained results which may go to explain the statement of some, that the pigment gives the iron test. The yellowish globules already mentioned all give the Berlin-blue reaction distinctly, but in different degrees of intensity. They occur in almost all organs, though in most places sparingly. They can be found in the endothelial cells of the vessels, sometimes in the vessels, among the blood corpuscles. In the kidneys they are present also in the epithelial cells, but here not all the yellow particles, even in the same cells, give the reaction. In the spleen there is a diffuse blue stain from fine particles which give the test. In the macrophages, among the other enclosures, fine blue particles appear. The liver shows three kinds of pigment: the malarial pigment, the orange-yellow pigment, common in that organ, and yellow granules similar to those in other organs. Of the three, only the latter give the blue reaction. In my case these granules are present in great number, being almost as numerous as in the case of pernicious anæmia. In the case of rupture of the spleen there are almost as many, but in the algid case there are comparatively few. The casts in the renal tubules do not give the reaction at all, a result which surprised me, but which was very thoroughly controlled. (In these casts there was no malarial pigment.)

There is, then, in malaria an unusual deposit in certain organs of a material which gives an iron reaction, though the malarial pigment proper does not do so. There is a very simple explanation of the origin of this material, which has occurred to others. The explanation is as follows: The true malarial pigment is an excrementitious substance formed by the digestion of the red blood-corpuscles. In the development of the parasite the corpuscle infected is not always completely digested, but a narrow ring or part of a ring is left. Even in the case of the larger parasites of tertian or quartan fever, which, when full-grown, are as large as or larger than a red corpuscle, complete digestion of the red cells does not always occur. In the case of the smaller parasites of pernicious fever a comparatively large part of the red corpuscles must be left over after the development of the relatively small organism. But the relics of the affected cells must be unable to carry on the ordinary functions of blood corpuscles. Evidently they must follow the course of worn out red corpuscles, and some of their constituents be used over again or excreted. For the former purpose they will be taken up by various cells, especially by cells in the spleen, the liver, and the bone-marrow. According to this view, the iron-reacting granules in the various cells are derived from the débris described, the hæmoglobin having been so altered as to give the iron reaction. It is interesting to see that this storing-up takes place to a greater extent in some organs and some cells than others, just as occurs under ordinary circumstances, and in my cases is most marked in the great "magnet" of Kobert, the liver. Part of the hæmoglobin may also be excreted by the kidneys.

In my cases this seems to have been slight, and the results of the iron tests in the kidneys were so different from those of Stieda[1] that it would seem that storing-up and excretion vary in different cases.

There are some other possibilities which may be mentioned. One is that the iron-reacting granules are derived from the malarial pigment, which has been altered by the cells containing it. Against this view is the fact that in those cells in which the blue granules are most numerous the ordinary non-reacting pigment cannot be found. The malarial pigment must ultimately be worked up in some way, or eliminated, because in examinations of old cases of malaria there is much less pigment than one would expect to find; but even in these cases the unmistakable pigment left in the connective tissue gives no iron reaction.

Another possibility which may be suggested is that part of the dark pigment occurring in the leucocytes has been formed there out of hæmoglobin remnants. There is no evidence of this, however, and the malarial pigment, from all we know about it, seems to differ from all the other pigments formed by or from the blood.

SYPHILIS OF THE EPIDIDYMIS.

By Charles W. Allen, M.D.,
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During my term of service at the City Hospital, just drawing to a close, it has been my fortune to treat several men whose histories are not without interest, and in relating them in connection with some previous observations, I will take occasion to speak of those conditions of the epididymis in syphilitics, which are too commonly passed over with the comprehensive diagnosis "Syphilitic testicle." There are, as is well known, instances in both early and late syphilis, in which the epididymis is alone involved, while the globe of the testis remains free, but too little attention has been paid to them, and they are usually passed over in the text-books with either slight comment or are wholly neglected. I do not wish the not infrequent combination orchi-epididymitis to enter into this discussion, nor will I dwell upon those instances in which both globe and epididymis are coincidently affected, and the epididymis is simply indurated and enlarged after the testis has softened and regained its normal condition.

In support of my proposition that authors have comparatively little to say about the epididymis as an independent seat of specific involvement, I quote from several different sources the following sentences:

[1] Centralblatt f. allg. Path. u. path. Anat., 1893, p. 321.

"In the later stages of syphilis the epididymis is affected only when the testicle itself is diseased." "The epididymis may suffer with the testicle." "The earlier syphilis attacks the testicle the more liable is the epididymis to suffer." "An isolated affection of the epididymis alone does not occur." "The epididymis is a common seat of tubercular disease, but a very exceptional one for syphilis at so late a date." The more recent special works on syphilis devote more or less space to the subject, but regarding it as among the least discussed questions of syphilis, I have chosen it as one to which a brief consideration may profitably be given. I would, then, propose as a thesis from which such consideration may radiate, that the epididymis is capable of suffering by itself, and not infrequently is affected independent of the testis proper, not only in the early consecutive period of syphilis, but in all stages of the disease and sometimes quite late. This involvement of the epididymis may be of inflammatory nature, with deposit of plastic matter between the tubes, cementing them together into a more or less firm mass; it may take the form of minute gummous deposits disseminated throughout the parenchyma, but more especially in the globus major, giving an irregular and possibly nodular outline to the touch; it may occur as a diffuse gummous infiltration or hyperplasia, occasioning smooth, plate like masses which may become veritable tumors in the scrotal sac; or a condition of sclerosis may result, the epididymis becoming firm and fibrous in much the same way that the tongue suffers in sclerous glossitis after neglected gummous infiltration.

In what is commonly designated syphilitic testicle, the epididymis is co-affected in perhaps one-third of the cases, and the possibility of the latter organ remaining enlarged after a mild grade of orchitis which has disappeared is mentioned again simply to indicate a source of possible error in diagnosis.

If we approach the question from the analogical side we are at once strengthened in the belief not only that syphilis of the epididymis may exist as an independent thing, but that in point of fact it should be a not infrequent manifestation of the syphilitic state. It is more or less generally known that the epididymis may alone become affected in quite a number of diseases capable of infecting in succession or coincidently various portions of the economy. This we find to be the case at times in mumps, typhus abdominalis, scarlatina, variola, amygdalitis, and some forms of pyogenic microbe poisoning, to say nothing of the various acute and chronic forms of urethral epididymitis of which that caused by blennorrhagic infection takes the very advanced lead. Furthermore, we have accounts, from inter-tropical countries more especially, of forms of malarial poison which expend their force upon the epididymis. Coming back to the poison of syphilis, and observing its effects as modified in the hereditary form, we find as a rare condition an interstitial epididy-

mitis in young children without sign of disease in the globe. While associated with orchitis it is quite common. When the epididymis is alone affected the enlargement is apt to be double-sided, and this we will see to be the case very often in acquired lues. There seems then to be no valid reason for a theoretical exclusion of the epididymis from occasional attack by itself, and I believe the reason it has not more often been observed and recorded is because of the painless nature of the condition which makes it easy to escape observation; the patient often making no complaint, the physician does not have his attention especially directed to it unless there is much enlargement. The early syphilitic epididymitis, whose first description is usually ascribed to Dron, but which Engelstedt seems to have written about two years earlier, in 1861, had almost escaped recorded observation up to this comparatively recent date. Since then little has been added to the literature bearing upon it if we except the brief writings of Szadek.

The term "epididymitis" is applicable here because the process is of inflammatory nature, and still so little pain is occasioned by it that oftentimes no complaint is made. The limits of time for the appearance of this epididymitis have been placed within the third and thirtieth months succeeding the chancre. While I have seen several instances which fell within this period, I feel certain that the identical condition may develop at a much more remote date from the infection.

The following instances of double epididymitis disappearing promptly under anti-syphilitic treatment impressed me as belonging to this variety, though eight and ten years respectively had elapsed since the infecting sore.

Case I.—T. J. was admitted to City Hospital on December 29, 1891, with the epididymis enlarged upon both sides, the left less indurated than the right, the testes being soft and normal. Patient had contracted syphilis eight years before. No gonorrhœa, no history of phthisis. When I went on duty, January 1st, I found the epididymis on both sides enlarged, slightly tender, and the cord slightly indurated. The globes of the testes were normal to the touch and to patient's sensation. There were no other evidences of syphilis present. Iodide of potassium was given in increasing dose to point of tolerance, patient remaining in bed.

On January 22d patient was discharged cured. The history of this case, as it appears on the hospital book, is, I regret to say, somewhat meagre. It does not necessarily follow that an epididymitis existing in a patient who gives no history of gonorrhœa or other urethral disease, but has a more or less distinct history of syphilitic infection, is for that reason surely specific. But in the following cases the diagnosis of syphilitic epididymitis was apparently confirmed by the prompt and marked improvement under the iodide of potassium and the local use of mercurial ointment.

Case II.—J. W., aged thirty-one years, was admitted December 11, 1891. There is a history of syphilis acquired ten years ago, and patient

has a syphilitic eruption now upon the skin. There is a history of only one attack of gonorrhœa eight years ago; no gleet. One year ago both testicles swelled up, patient says, and remained so for six weeks. This swelling never seemed to wholly disappear, and has increased off and on, especially after coitus. The present enlargement began three months ago, and has been entirely painless, but produces a sensation of dragging. Examination showed the swelling to be located in the epididymis of both sides, which were elongated and indurated, but not tender. Treatment by increasing doses of iodide of potassium and unguentum hydrargyri over the scrotum succeeded so well that on January 22d patient was discharged at his own request, although a slight amount of enlargement still remained.

Now it is in just such cases as the above that an enlargement of the epididymis may persist for years, and, in the absence of other syphilitic manifestations or history of infection, have its real nature ignored until, possibly as a safeguard before removal of the organ for supposed malignant disease or tuberculosis, a course of the iodides is tried, when, behold! the whole tumor melts away and a brilliant operation is lost.

A slight improvement under the iodides must not, however, have too much weight given to it, for I am convinced that in tuberculosis of the epididymis, as well as in some joint and skin affections, a certain temporary improvement may result from such a course of treatment. Where fibrous changes have taken place we cannot hope for a return to normal form and size; and when pressure has been exerted, surrounding, and perhaps parenchymatous, fibrinous deposits may result; but, aside from such changes, the iodides should effect a perfect cure.

Case III.—M. E., aged fifty years, a strong, healthy-looking man, was admitted January 14, 1893. Two years ago I had performed a perineal urethrotomy upon him for the relief of a very tight stricture in the deep urethra, which resulted in prompt and complete cure, since which time he had remained well and free from any urethral discharge or symptoms. Patient had had syphilis ten years ago. About two months before coming into the hospital and a week after a slight injury to the right testicle, caused by climbing over a partition between two rooms (the patient assuring me there was no woman on the other side), a swelling was noticed which was tender and painful, necessitating rest in bed for a few days. Examination revealed a scrotal tumor twice the normal size, which was found to be due to enlargement of the epididymis alone, the globus minor being bound down to the connective tissue and skin of the scrotum. The skin over this indurated mass, which showed very little tenderness, gradually became violaceous and finally broke down, discharging a thin watery pus from a small opening, which remained for several weeks as a discharging fistula. The enlargement of the epididymis was found so irregular and nodular, as the scrotal swelling subsided, and was attended with so little discomfort, and entire absence of pain, that tuberculosis of the organ suggested itself at once to the mind, and the subsequent fistulous formation only tended to strengthen this view. However, from the history of the case, it was thought at least possible that it might be an instance of specific epididy-

mitis, the injury received acting simply as an incentive to the development of this local manifestation of the constitutional disease. Proto-iodide of mercury was therefore prescribed from the start; but, as mouth symptoms soon appeared, the iodide of potassium was substituted in gradually increasing dose until over a drachm was being given three times daily. This medication appeared beyond doubt to act in causing a speedy cessation of the softening process in the scrotal infiltration and gradual decrease in the discharge as well as in the size of the enlargement of the epididymis. After a time there developed an iodide eruption over the extremities, which took the form of an erythema nodosum, with lesions varying in size from a quarter piece to that of a silver dollar. The iodide was consequently decreased, given in milk, and belladonna ordered. In this way a moderate dosage was maintained until late in March, when the dose was but 30 grains daily. The improvement had been rapid and marked. Now daily hot sitz baths, followed by massage of the epididymis and tissues to which it was connected, were begun and continued until the patient was discharged as cured on April 2d. The fistula had been closed for some time, the epididymis (which showed no longer any infiltration) had regained almost its normal size and contour (the scrotal skin had a healthy appearance), and there only remained a cord-like band extending from the region of the tail of the epididymis into the subcutaneous connective tissue.

In my experience trauma alone occasions no such picture, and in tuberculosis iodide brings about no such radical restoration. The case illustrates that class which resembles tuberculosis, but is not to be confounded with that other pseudo-tuberculosis which follows chronic epididymitis, due to urethral causes. A patient presented by me a year ago at the Academy well illustrated the latter form. Here a cure was effected, mainly by time alone, after the accompanying hydrocele was cured by carbolic injection.

Case IV.—M. D., an Italian, aged forty years, was admitted January 3, 1893. There was a history of syphilis and secondary manifestations. Some months ago the patient had a hydrocele upon the left side, which was operated upon. Shortly afterward the right side became enlarged, and the patient, making his own diagnosis of the same condition, undertook to be his own doctor, and attempted to make an opening with a pin to let out the water. The operation was not a success, so he applied for treatment. Examination showed the right epididymis greatly enlarged, causing a firm, hard, painless tumor, with no fluid in the tunica vaginalis. Patient was put to bed, with scrotum suspended, and over it mercurial ointment was kept constantly applied, while iodide of potassium was given in increasing doses. On January 12th patient was discharged, greatly improved, and the diagnosis of syphilis of the epididymis seemed to be confirmed by the rapid disappearance of the enlargement under specific treatment.

Case V.—F. Q., aged forty years, came into the hospital on February 7th, expecting to have his left testicle removed. He had been told by his physician in town that he would have to undergo an operation. My house surgeon said to me, as the dressings were removed at my first visit: "I suppose there is only one thing to do in this case?" He had

already proposed castration, and the patient had consented in case I said it was necessary. The case was one of gumma, involving the scrotum and deeper parts in an extensive slough, and I mention the foregoing circumstances to give an idea of the destructive process which had already taken place, and of the appearances presented by the tumor, which threatened still greater damage.

The history was one of syphilis acquired nine years before, which had been treated for a short time only, and principally with iodide of potassium, for the most part self-prescribed. There had been no active signs of the disease for six or seven years. One year ago the left testicle began to swell, but the swelling was painless, and, as it gave no trouble, nothing was done for it until one month ago, "when the lower portion of the bag seemed to grow fast, and finally turned into a discharging sore." He then went under treatment, but the increase in size of the swelling and extension of the ulceration, he says, led the physician to advise hospital care, as he thought the growth would have to be removed. Examination of the scrotal contents showed the tail of the epididymis enormously enlarged, firm, and distinctly bound down through the connective tissue with the deep sloughing ulcer of decided gummy appearance. The head and body of the organ formed a cartilage-like plate of thickened tissue over two inches in diameter, distinctly separated from the testis, which latter appeared soft and normal to the touch. The adherent mass of slowly suppurating tissue which formed the floor of the ulcer was scraped out with Volkmann's spoon and packed with bichloride gauze. Iodide of potassium was given in daily dose of forty-five grains, gradually increased, so that by February 22d three drachms were being consumed. By March 3d the ulcer had healed under this treatment, combined with local mercurial inunction over more than half its extent, while the epididymis in all parts was decidedly smaller, about a quarter of its original size, but still of cartilaginous hardness.

March 16. The attachments of the external to the deeper parts is much less firm, and the external mass cannot be separated from the enlarged and hard tail of the epididymis. The decrease in the size of the globus minor has been more rapid than in the globus major.

24*th*. Ulcer about healed, and surrounding infiltration hardness much diminished. Ordered iodide, which has been given for some days in dose of three hundred grains daily, gradually diminished on account of slight iodide eruption on the face. Daily hot sitz bath, followed by the form of massage known as petrissage, or combined kneading and pressure of the organ, with the view of encouraging lymphatic absorption. This was done for twenty minutes, morning and evening, with the result of hastening the retrograde process.

April 14. Testis soft, globus major still appears as firm, smooth tumor, one-sixth the size on admission; ulcer healed. Patient discharged, but advised to continue iodide till all infiltration disappeared.

Case VI.—H. N., aged thirty-four years, came under my observation on March 1st. He had a history of syphilis, acquired five years ago, and was only treated for three weeks. No gonorrhœa for six or seven years. Patient states that the right testicle swelled up after a cold, contracted a month ago. Had never before had such a swelling, and there was no urethral trouble and no injury. There was no pain attending the enlargement till four days before he came under treatment, when pain was experienced in the groin and back.

Examination showed the epididymis, and especially the globus major, to be enlarged, smooth, hard, but not tender to pressure. The tail is thickened, but the body is not much enlarged. The globe of the testicle appeared soft and but little, if at all, larger than its fellow.

Treatment by local inunction and iodide internally (gr. x), gradually increasing the dose.

March 24. Now twenty grains of iodide three times daily. Epididymis smaller, but still hard and enlarged in all parts. Testicle appears a trifle larger than at first, though soft to the touch. Whole tumor mass much decreased.

Ordered twice daily hot sitz bath and petrissage to whole scrotal contents on this side.

April 7. Remarkable decrease in size of epididymis since latter treatment was added to the iodide, now given in drachm doses.

Patient was discharged for insubordination about April 20th, at which date there were scarcely any remains of the infiltration.

CASE VII.—H. B., aged forty-three years; first seen February 25. Had gonorrhœa for the last time ten years ago, and has had no urethral discharge or disease since. Contracted syphilis ten years ago. Six weeks ago the left testicle began to enlarge gradually, and at first painlessly, but subsequently pain was felt after walking much.

On examination the testis was found large, smooth, firm, non-sensitive to pressure, the epididymis distinctly but not greatly enlarged.

Treatment.—Iodide in increasing dose.

March 10. Patient now taking two drachms daily, and has an iodide eruption over face and backs of hands, resembling the wheals of urticaria. Ordered drug decreased and given with belladonna.

24*th*. Now at forty-grain dose again, and eruption has reappeared. Ordered iodide decreased rapidly.

April 1. Epididymis now plainly enlarged, while testicle is soft and much decreased in size.

15*th*. Discharged. Epididymis greatly reduced in size.

This case is included merely to illustrate the class to which an orchitis may, as it disappears, leave behind a still enlarged epididymis, which, in the absence of reliable history, could be mistaken as the primary and sole affection.

A somewhat similar case of orchi-epididymitis is the following:

CASE VIII.—A. J., aged 28 years; was admitted September 22, 1891. He had had a chancre seven years before, followed by secondaries, and on admission showed signs of syphilis. Eleven weeks before, the left testicle had become swollen, and when I first saw him, on January 1, 1892, the epididymis was now alone affected, being enlarged and tender on manipulation. He was discharged cured March 7, 1892.

The diagnosis of syphilis of the epididymis must be made from a variety of other conditions, but while urethral epididymitis of course leads in frequency, we must bear in mind that parenchymatous enlargement may take place from a variety of systemic or general affections already enumerated, while those forms which have occasionally been attributed to rheumatism or gout are probably to be referred more

accurately to urethral or syphilitic causes if carefully analyzed. In acute blennorrhagic epididymitis we have the discharge and the acute onset, with pain, to render the diagnosis clear, while in the chronic urethral form the tail is the part of the epididymis most frequently left hard, and there is a history of urethritis usually not very remote. In the pseudo-tubercular variety, with nodular indurations often marked by accompanying hydrocele, the diagnosis is more difficult, but concomitant evidences of syphilis will assist. Here, too, the diagnosis must be made from tuberculosis, and coincident evidences of tuberculous disease in other organs must be looked for or excluded. If patient is syphilitic, and has recently had a gonorrhœa, the difficulties are increased. The pseudo-tuberculous epididymitis is pecularly indolent and not influenced by iodides, and some cases will have to undergo a period of observation before a positive opinion can be vouchsafed.

When fibrous changes have taken place after a chronic gonorrhœal inflammation, much care must be exercised to avoid faulty interpretation of the condition.

As a rule, the globus major is alone or primarily affected in syphilis, but as this is true also of tubercular change, it has no great diagnostic value as between these two states. Diagnosis must also be made from cancer, sarcoma, fibrous tumor, cyst, etc.

In cancer there is inguinal adenopathy and possibly cachexia.

The early diffuse syphilis of the epididymis, or syphilitic epididymitis proper, is usually confined to the globus major, though cases are recorded in which the tail has been alone inflamed, and often the body suffers too. The enlargement may be either rounded or irregularly square or angular, and not often much larger than an American chestnut. There appears to be a decided tendency for both epididymes to suffer coincidently or one after the other. If other diagnostic features are not sufficient, the fact that the infiltration entirely and quite promptly disappears under anti-syphilitic treatment makes its nature clear.

Sequelæ are usually absent, while after gonorrhœal epididymitis fibrinous remains are apt to show themselves for a long time, especially about the tail.

The gummy tumor of the epididymis may occur quite early or very late, as seen in instances cited. If small gummy nodules are scattered through the organ, especially the globus major, there may be but little enlargement, while if a diffuse gummy mass has formed, the tumor may surpass the normal size of the whole testicle several times over. Such gummata may, in being absorbed, leave the organ atrophied. Here the diagnosis is more especially to be made from orchitis gummosa, and from gumma involving both testicle and epididymis, while those showing great plate-like masses, as in Case V., may simulate vaginalitis or periorchitis prolifera, but in the latter the thickened mass would not melt away under

iodides, as they did in this case. In orchitis the scrotal skin is here stretched tense, and the veins are more distended.

Case IX.—Mr. F., a young man aged twenty-four years, came to my office in October, 1890. He stated that the left testicle had given him trouble for five years. He had first had an abscess in the left groin, which, he said, had "dropped down," forming an abscess in the left testicle, which had ruptured through the scrotum, and shortly after had a perineal abscess. The testicle trouble had left a fistula, which was still discharging at the time I first saw him. There was a history of gonorrhœa four or five years ago, which patient stated had begun after the inguinal and scrotal abscesses, which he thought were in no way connected with urethral trouble. He had never had any previous venereal disease, but gonorrhœa once since, and never any evidences of syphilis, which he says was excluded by the physician who then treated him, as was also tuberculosis, or, at least, bacilli were sought for and not found. The condition, he said, was pronounced simple inflammatory.

Five months ago the right testicle began to give trouble, and a small "lump" formed in the lower part, just like that which had appeared five years before on the left side preceding the abscess. This lump had given no pain until three days before I saw him, when an acute swelling began, attended with adhesion between the scrotal skin and parts covered by it, and a puckering-in of the tissues.

Examination showed the left epididymis enlarged, firm, nodular, painless to pressure, and from the region of the tail to the most dependent part of the scrotum was a discharging fistula, about which the tissues were all bound down by firm bands, and a second opened on the external surface of the scrotum. The testicle was small, as though atrophic and sclerosed.

The right epididymis appeared about three times its normal size, was thickened, knotty, and irregular. The tunica vaginalis was found filled with fluid which, according to the history, had accumulated rapidly and for the first time. This fluid, amounting to about eight ounces, I drew off without injecting the sac. Ordered iodide of potassium, and mercury and belladonna ointment. I did not see the patient again for nearly a month. In the meantime there had been no further pain, but the hydrocele had returned to about one-third its original size. The iodide in ten-grain dose had produced salivation and pain in the jaw, so it was dropped to one grain, and gradually increased. The general health had improved, and the left epididymis was surely in a better condition. Ten days later I drew off five ounces of fluid. Treatment continued. In less than a month the upper fistula on the left side had closed, and the enlargement of the epididymis had apparently decreased in size, but became more dense. On the right side hydrocele fluid was reaccumulating.

January 6, 1891. In attempting to draw off fluid, the tumor of epididymis was accidentally punctured, a little bloody fluid was drawn off, patient fainted, and operation was postponed. This I will here state, was the last attempt to treat the hydrocele surgically, and although the fluid was only removed in very small part at this time the remainder was absorbed, and to the present time has not returned. Patient was now put upon the tannate of mercury, three grains daily.

20*th*. Left testicle has seemed to become more more atrophic. The

second (lower) fistula has ceased discharging; the upper remains closed. patient says there has been wonderful improvement on both sides.

Upon the right side the skin has ruptured where adhesions were present when patient came under treatment, three months ago, and a fistulous opening is now discharging yellow pus.

March 12. Right epididymis decidedly smaller; fistula discharging.

October 22. Patient says he took about two ounces of iodide during the summer. Ordered tannate pills gr. ½, three daily.

November 29. Gradual improvement. No fluid in sac; no soreness, and sense of weight gone. Whole enlargement much decreased; testicle soft and small. Whole epididymis larger than normal, and globus major quite hard. Fistula on both sides discharging slightly. Tannate continued.

I did not see the patient after this for a year, and his treatment was neglected.

November 13, 1892. Patient states that fistulæ healed, and there was no discharge for a long time. The scrotum contracted well up about the testicles, rendering a suspensory no longer useful, and patient considered himself about well.

In December, 1892, the patient contracted gonorrhœa, and there was a swelling upon the right side, and the fistula opened again, and shortly after a new fistula formed high up on the left side. Ordered saturated solution of iodide, gradually run up.

February 1, 1893. Examination showed epididymis on both sides still somewhat firm, irregular, and slightly enlarged. The most recent fistula was discharging a small amount of watery fluid. Patient considered himself in a satisfactory condition, and has not been seen since. The iodide was ordered continued.

Now, in the above case, in spite of much interrupted treatment, there has been a very great improvement—so great, in fact, as to encourge a hope of complete cure if treatment could be faithfully carried out. The case looked at first, and continued to look, so much like tuberculosis, that in spite of the benefit from the anti-syphilitic remedies, I was never willing to say that it was specific. Indeed, I believe that in spite of the small amount of iodides and mercury consumed, we have reason to expect more prompt and lasting results. There is one thing, however, which I firmly believe, and that is, that the man is better off, mentally and physically, having his manly powers preserved in a state of functional activity, than if his testicles had one or both been extirpated, even if they had been found when slit open upon the operating-table to be filled with tubercle.

Now, as concerns the question of abscess and fistulous formation in gummous infiltration, they may occur, as we have seen from Cases III. and V., in both of which gummy abscesses of the scrotum ruptured externally, and in one of which a fistulous opening remained, and discharged for some time. Affections of the albuginea have been considered more likely to result in this way from their superficial situation, but in these cases there seemed no doubt that the process started in the epididymis. Gumma of the

cellular tissues of the scrotum alone would be freely movable over the tail of the epididymis, which could be distinctly separated from it, which was here not the case. Ricord's view, that when suppuration of the scrotal tissues took place it was always due to changes in the cellular tissue, rather than in the testicular parts, is clearly faulty, and Rollet plainly showed, in 1861, that gumma of the testis could soften and discharge externally, and I have myself seen a gummy testis discharge itself externally with the formation of a large fungus.

That fistulæ may disappear under iodides is shown in two instances here recorded. The condition is at best rare in which a fistulous tract reaches the testicle, but instances in which they connect the epididymis with the outer world are still more rare. Cases in which persistent fistulous openings have existed have been too often subjected to castration, more especially in former times. Thus, West records two instances, one seven and the other four years after the chancre in which this operation was done, and on examination in one case disseminated gummata were found in both epididymis and testis, and in the other a fibrinous deposit, causing adhesion to the skin and breaking down of the lowly organized product. This was in 1859. To-day, I have no doubt, these testicles would have been saved by the iodides.

MADISON AVENUE AND 59TH STREET.

A CASE OF TUBERCULOSIS OF THE SKIN SIMULATING LUPUS ERYTHEMATOSUS AND ERYTHEMATOID LUPUS VULGARIS.[1]

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THE following case is, I think, of sufficient clinical and pathological interest to warrant its publication.

The patient is an intelligent pharmacist, of about twenty-eight years of age, who has hitherto enjoyed good health. His father and mother, and a sister a few years younger than himself, are living and well. There is no tubercular history in the family.

The young man himself is quite tall and spare, and has a markedly sallow complexion. Although he looks frail and delicate, and has looked so for a number of years, he is capable of great endurance. The following notes were taken from time to time during the past year.

Last May (1892), Mr. N. noticed on his left malar region a small yellowish elevation of the size of a pin-head, which he thought was a

[1] Read at the Seventeenth Annual Meeting of the American Dermatological Association, Milwaukee, September 5, 1893.

"flesh-worm," but when it was squeezed only blood came from it. This gradually enlarged peripherally, and became hard and red. There was no pain or other subjective symptom. When he first came under my care, in June, 1892, this lesion was as large as a dime, with an atrophic, whitish centre, surrounded by a slightly raised, infiltrated, dull-red border. The affected area seemed markedly anæsthetic, a feature that has been noted in connection with the tubercular syphilide. This anæsthesia was only temporary, and the parts soon regained their normal sensibility. At this time the patient passed from under my observation for about a month, and in the interval was given a thorough anti-syphilitic treatment by a physician who did not agree in my opinion of the case. This treatment did no good, but only aggravated the general and local condition.

September 3, 1892. The original lesion is now as large as a half-dollar. It is not raised, but upon picking up the skin it is found to be moderately infiltrated. The centre is atrophic and of a somewhat dirty-yellowish color, but at the borders there is still a narrow dull-red line.

In the middle of September several small acneiform pustules appeared suddenly on the face. There was one on the right temple below the hair, one on the side of the nose at the interior angle of the right eye, one on the end of the nose, one on the right ala, and, lastly, one on the left cheek near the angle of the mouth. They gave rise to no pain or other symptoms. Each papulo-pustule was surrounded by a narrow red areola. The red borders extended, became infiltrated, and crusts formed over the centres of the lesions. These scales or crusts were fatty or sebaceous in character, and with the dull-red surface beneath were suggestive of lupus erythematosus. When in the course of weeks the borders kept on extending, the centres cicatrized and presented the same dirty-yellow appearance as in the original patch.

December 9th. Thiosinamine was given hypodermatically at 12 M., and, according to the patient's statement, about 7 P.M. the patches became hot and red, and remained so for an hour or more. I may say here that a number of similar injections were given, but no permanent effect on the disease was obtained.

22*d*. The lesion under the right eye is now as large as a quarter-dollar. The centre is pale pink-looking and depressed, while the border is dark red, and still extending. The spot on the left temple has been thoroughly electrolyzed, but still spreads. At this date a new spot was found on the chest, which looked in the beginning like an acne papule, capped by a small pustule, but in the course of a few days this latter dried into a small yellowish crust or scale. In about two weeks or more this crust became detached, and revealed a purplish-white atrophic centre. Synchronously with this process the slightly elevated red border had extended until it was as large as a pea in circumference. At this stage it was thoroughly destroyed by electrolysis. It is quite likely that all the lesions pursued a similar method of evolution, but owing to interruptions in observation, the effects of treatment, and the merging of lesions into each other, it has been a difficult matter to make continuous observations.

Some time early in January a small piece of skin was excised from the lesion on the right temple for microscopical examination. The original patch, and the one on the left cheek, were deeply electrolyzed, with an apparent cure of the disease; but after a few months there was a relapse of the process, which manifested itself by the formation of a scab in the

centre of the scar. When this scab was removed there was exposed a deep-red surface that showed plainly against the pink of the cicatrix. These spots were electrolyzed as soon as they appeared, and with apparent success. In March, a small patch similar in all respects to the others appeared on the scalp in the right anterior parietal region. It is now the size of a dime.

The tendency to peripheral extension has been a marked feature; and finally, when the whole nose was involved, and became a continuous sheet of partly red and partly cicatricial integument, the likeness to some forms of lupus erythematosus was most striking. I think this appearance would have been still more suggestive if the patches on the side of the face had been allowed to coalesce; but in these places the electrolysis seemed to bar their onward march.

At no time could the nodules of lupus vulgaris be demonstrated in spite of repeated attempts and after applying the usual means for their detection (such as rubbing on glycerin, etc.). It must also be stated that the sebaceous plugs of lupus erythematosus were not seen at any time, although the primary eruptive spots had the exact appearance of a papulo-pustular acne lesion.

The patient's general health has been poor. At one time he seemed on the brink of a general tuberculosis, but a trip to Colorado soon set him up again; after a few months, however, of hard work indoors he again began to lose flesh, to be again restored by a Western trip. I have just learned that his disease is apparently quiescent, and that he feels unusually well. Expert examinations of his lungs and larynx, that were made from time to time, showed nothing abnormal.

The excised portion of skin was sent to Dr. C. Heitzmann. On January 12, 1892, I received the following letter from him:

"NEW YORK, January 12, 1892.

"The piece of skin sent a few days ago was halved; one half being forwarded to my son for bacteriological research, the other half being placed in a one-half of 1 per cent. solution of chromic acid for histological examination.

"Dr. Louis Heitzmann reports the tissue holds tubercle bacilli in moderate numbers. The histological examination shows dermatitis all throughout, though in some places far more pronounced than in others. In the latter places I found crowds of inflammatory corpuscles replacing the fibrous connective tissue. These nests of inflammatory corpuscles are produced in the manner usually seen in tuberculosis. The epithelia of the rete mucosum are partly absent, partly transformed into inflammatory corpuscles. The root sheaths of the hairs are enlarged, the hairs themselves present and intact. Diagnosis: Local tuberculosis of the skin entirely in accord with the clinical diagnosis. C. HEITZMANN, M.D."

It was apparent from the beginning that the patient was not suffering from any known form of syphilide, and this opinion was strengthened by the absence of any specific history, and the further fact that he had been subjected to a most thorough course of anti-syphilitic treatment; indeed, he grew steadily worse under mercury and iodide of potassium. Since, however, the microscopical examination has demonstrated the tubercular character of our case, it will be interesting to compare it clinically with other forms of tuberculous diseases of the skin, viz.:

First, tuberculosis of the skin proper, which occurs in the form of shallow ulcers in the vicinity of the lips; second, the tuberculosis verrucosa cutis (Riehl and Paltauf); and third, the various forms of lupus vulgaris.

The first two forms of cutaneous tubercular infection may be dismissed from consideration; but it remains to be seen if the symptoms just described bear any likeness to the erythematoid lupus vulgaris of Leloir. This last disorder simulates lupus erythematosus very closely, and only after careful and long-continued observation can its affinities to lupus vulgaris be detected.

Somewhat abridged, Leloir's description of erythematoid lupus vulgaris is as follows: It occurs on the face, rarely on the trunk, and never on the limbs. It appears as a large or small plaque, occasionally in one, two, or three patches usually on one cheek, but often invading the nose and both cheeks in a symmetrical manner, just as in butterfly lupus erythematosus. The affected surface has a more or less lively redness, which disappears in part on pressure. The surface is seen to be marbled by a sort of quadrillage of a red-brown or violet, in the midst of whose meshes may be found small white or yellow points. Fine vascular arborizations may also be noted, especially at the periphery. The erythematous surface is sometimes here and there lightly desquamative, and even covered with small lamellar crusts, which may have a seborrhœic aspect, particularly at the borders of the plaques.

The plaque is slightly elevated at the margins, and, when sufficiently old, depressed in the centre. Notwithstanding these striking points of resemblance between lupus erythematosus and erythematoid lupus vulgaris, it often happens that if the skin is stretched at the level of the zone of the active extension of the disease, it is possible to make out the small yellow miliary nodules of lupus vulgaris, which will present the usual physical characteristics of such nodules. These lupus tubercles are very difficult to find, however, and not always present at a given time.

Other points that establish the true lupous nature of this affection are the profound infiltration of the plaques, and the fact, upon which Leloir lays much stress, that there is a tendency to cicatrization at the periphery—an event, he claims, that never takes place in lupus erythematosus.

The lesions presented by my patient certainly correspond very nearly to this description, except that I can state most confidently that in one year's constant observation, and using every precaution, it was impossible to demonstrate the presence of lupus nodules, and, moreover, the infiltration was by no means so deep as one is led to infer is the case in the observations made by Leloir. Other minor points of difference may be noted also, but in the presence of the essential dissimilarity—that is, the absence of lupus tubercles—they may be passed over.

It is very interesting to remark that in every instance when the opportunity for watching the evolution of the disorder occurred, it was seen to begin invariably as an acneiform papulo-pustular lesion.

A careful perusal of Brocq's account, given in the first edition of his book, of what he terms fixed erythematous lupus, and which he regards as always tubercular, shows that he and Leloir are substantially describing the same disease. It will probably occur to many that in America, at least, we have not made these distinctions, and that we have habitually confounded fixed lupus erythematosus with the aberrant form or the *erythème centrifuge* of Biett.

While I have no desire on the strength of a single case to differentiate a new form of tuberculosis of the skin from those already described (including lupus vulgaris in this category), I may be allowed to ask, Does it always follow that infection with the tubercle bacillus invariably produces only the clinical picture of lupus vulgaris, or tuberculosis cutis vera, or tuberculosis verrucosa cutis?

Barring mal-observation, it occurs to me that in the case just described we have the history of certain undoubted tubercular lesions of the skin which in some important particulars differ essentially from all others hitherto recorded; and it may be that future observations will confirm my suspicion that we are but beginning to recognize the manifold aspects of tubercular infection of the skin.

Finally, it may be asked by those who believe in the tubercular nature of the ordinary lupus erythematosus, why this case is not an example of that disease? Most dermatologists of to-day would reply at once that the discovery of the tubercle bacilli in the lesions disposes of the question.

Thus, Mr. Malcolm Morris, in an able paper read at the Second International Dermatological Congress, concludes that lupus erythematosus must be regarded as a chronic inflammation of the skin, local in its origin, and generally local in its course, unconnected, as far as our present knowledge goes, with any underlying constitutional state. It is true that certain physicians do not share this opinion, and look upon lupus erythematosus as directly or indirectly tubercular; still, by far the greater number of dermatologists regard it as a local disorder.

Leaving out of consideration the erythematoid lupus vulgaris of Leloir, and the possible cases, such as mine, of tuberculosis of the skin that closely simulate lupus erythematosus, it is quite possible that the ordinary superficial butterfly lupus erythematosus is a purely local affection; but we have still to explain the disseminate erythematous lupus of Kaposi, of which I have reported two cases—a malady that in the beginning is of the ordinary type, but which later becomes widely spread, is complicated by formidable general and local symptoms, and not uncommonly ends in death.

But this is a subject too extensive to discuss in this place, and I shall conclude with the statement that our clinical conception of lupus erythematosus and tuberculosis of the skin is by no means precise, and is in need of a thorough revision, and perhaps extension.

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PEMPHIGUS: ITS CLINICAL VARIETIES AND TREATMENT. WITH A REPORT OF UNUSUAL CASES.[1]

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The term pemphigus (πέμφιξ, bulla or blister) was first applied by Sauvages[2] to a febrile disorder accompanied by an eruption of bullæ which had been previously described by Lepoise in 1618, as well as under various names by Hippocrates, Galen, and Aëtius. Willan[3] and Bateman,[4] of England, in writing of this affection in 1808 and 1814, respectively, doubted the existence of the disease mentioned by Sauvages, but described an affection under the name of pompholyx, which we now recognize as pemphigus. The disease described by these authors as "an eruption of bullæ, appearing without any inflammation around them, without fever, and frequently recurring in the same subject," is clear to anyone who has had an opportunity to observe this well-marked affection.

At the outset it is well to bear in mind that although pemphigus is characterized by the presence of bullæ, yet these lesions are also encountered in other morbid conditions, such as syphilis, eczema, traumatism, etc. In these, however, the bullæ are either anomalous, or from the nature of the case entitled only to a secondary consideration, while in pemphigus they are the essential lesions and appear in successive crops.

Varieties.—Willan originally included in the same order erysipelas, pemphigus, and pompholyx.[5] Later, erysipelas was eliminated, and pemphigus became the representative of the bullous group. Cazenave contributed to our knowledge of this affection when, in 1844, he so accurately described an exfoliative form of the disease. As recognized to-day, therefore, pemphigus presents two main varieties, pemphigus vulgaris and pemphigus foliaceus.

Pemphigus vulgaris, the form most commonly met with, is usually a chronic disease, in fact so rarely does it pursue an acute course that its existence is denied by Hebra[6] and is not mentioned by Anderson.[7] Yet as undoubted cases have been reported by such competent observers

[1] Read before the Mississippi Valley Medical Association, Indianapolis, October 5, 1893.
[2] Sauvages, F. B.: Nosologie méthodique, Class III., Gen. 3, Paris, 1770.
[3] Willan: Cutaneous Diseases. London, 1808.
[4] Bateman: A Practical Synopsis of Cutaneous Diseases. London, 1814, p. 139.
[5] Bateman: Medical and Physical Journal, March, 1804.
[6] Hebra: Diseases of the Skin, 1866, vol. i. p. 396.
[7] Anderson: Diseases of the Skin, 1887.

as Cazenave,[1] Köbner,[2] Morrow,[3] Allen,[4] and Leviseur,[5] its presence can no longer be questioned. The disease described by Sauvages as pemphigus, whose existence was doubted by Willan and Bateman, evidently belongs to this form.[6]

Acute pemphigus is ushered in by great restlessness, a decided chill followed by a rise of temperature, which sometimes registers 104° Fahr., or even higher. Usually, in a few hours the bullæ appear. At first about the size of a coffee bean, they soon attain the dimensions of a goose-egg. Not infrequently two or more blebs coalesce, when they are easily ruptured, leaving large excoriated surfaces resembling scalds. New bullæ appear from day to day, as former lesions go through the process of resolution and repair, leaving at first a reddish, which changes into a bluish macula, and in the course of a few weeks completely disappears. From the first there is great thirst and dryness of the tongue, followed by albuminuria, delirium, and prostration. In the case of an adult reported by Allen, the disease ran its course in about three weeks and ended in recovery; while, according to Brocq, acute pemphigus in a great majority of cases terminates fatally in from eight to ten days. Most of the cases reported have been observed in children.

In the chronic form the appearance of the bullæ, in a large majority of cases, constitutes the main feature of the disease. They spring from apparently healthy skin and attain a variable size—from a bean to a goose-egg or larger. Their epidermic covering is tense and either ruptures in from three to five days, or their contents, consisting of a translucent fluid which soon becomes turbulent, is absorbed, leaving reddish-brown spots which in turn disappear.

The process, therefore, consists in the appearance of successive crops of blebs as former crops undergo involution. The severity of the disease is dependent on the amount of the cutaneous surface involved. Relapses are the rule. The temperature usually remains normal. Recovery may take place after three or four months or in as many years. The morbific tendency, however, as a rule, disappears within a year. Sometimes the mucous membranes are involved and the disease presents other peculiarities as observed in the following case:

R. H., male, aged fourteen years, was seen November 9, 1889, with Dr. Edwin P. Hawley, of Cleveland, who said the disease began nine days previously with a disturbance of the bronchial tubes, presenting the usual symptoms of capillary bronchitis, and a peculiar whitish appear-

[1] Cazenave: Maladies de la Peau. Paris, 1847.
[2] Köbner: Archiv für Dermatol. und Syph., B. i., 1869.
[3] Morrow: Atlas of Venereal and Skin Diseases. New York, 1889.
[4] Allen: Journal of Cutaneous Diseases, April, 1888.
[5] Leviseur: Quoted by Allen, loc. cit.
[6] "There is probably no such fever as that which has been described by a few Continental physicians under the titles of *febris vesicularis*, *ampullosa*, or *bullosa*, and to which Sauvages applied the term pemphigus." Bateman, loc. cit., p. 136.

ance of the mucous membrane of the mouth, tongue, and fauces, which was thought to be diphtheritic (pemphigus diphtheriticus). A day or two after this there was a partial suppression of urine, followed by general œdema. With the subsidence of the œdema there appeared on the extremities pea-sized blebs of a reddish-brown color (pemphigus hæmorrhagicus, or purpura bullosa), which in turn increased in size and became translucent. With this very peculiar history I first saw the case. Objectively the patient presented the ordinary features of pemphigus. Bullæ, in size varying from a pea to three inches in diameter, were distributed over the extremities with a few small ones on the trunk. The only peculiarity noted was that some assumed a ringed form with a small bulla forming a nucleus in the centre. There was still some œdema of the feet and ankles. The mucous membrane of the mouth presented raw, bleeding surfaces, and the epithelium was exfoliating in loose shreds. The eyes were also implicated; the conjunctiva was opaque, and the sclerotic congested. The sight was markedly impaired.

Nov. 15. There was a noticeable subsidence of the bronchial disturbance and the mouth also was somewhat improved. The eyes were seen by Dr. B. L. Millikin, of Cleveland, and appropriate treatment adopted.

After this the case passed out of observation. Later, Dr. Hawley informed me that there had been several reappearances of the pemphigoid eruption, and that the sight was completely destroyed. Further, as a sequela, there had been extensive gangrene of the hands and feet (pemphigus gangrenosus). The entire course of the disease lasted nearly a year.

Pemphigus foliaceus, the second main division, is a rare form, and is characterized by the formation of bullæ with loose, flabby epidermic coverings, often scarcely raised above the surrounding skin. These soon rupture, discharging a serous fluid which soon undergoes putrefaction, giving rise to the peculiar cadaverous odor which is so characteristic of the affection. Later in the course of the disease this exudation, together with the loosened shreds of epidermis, dries into large scales or plaques, which feature gives name to this variety of pemphigus.

Sometimes it first appears as an ordinary pemphigus, taking on its peculiar features later in its course. More frequently, however, these are present from the beginning. This form more frequently attacks the mucous surfaces, which may be the parts first involved. On the skin the lesions extend at the periphery until extensive tracts, or the entire surface of the body is involved. The palms and soles frequently escape. The hair becomes brittle and lustreless, giving rise to alopecia more or less complete. The nails frequently undergo the same changes, or are cast off in the process of suppuration. Resolution does not take place, nor do the lesions heal so readily as in pemphigus vulgaris.

Pemphigus foliaceus is a graver malady than pemphigus vulgaris, and, as described by Cazenave, is a chronic disease. As modern treatises on dermatology do not mention an acute form, I wish in this connection

to put on record a few unique cases of acute epidermic pemphigus of the newborn.

March 13, 1888, I was asked to see a child post-mortem with Dr. Charles Gentsch, of Cleveland. The child had been assisted into the world fourteen days previously by a midwife, at which time, according to the mother's statement, it was fully developed, fat, and free from disease. Four days after birth there appeared a peculiar eruption about the angles of the mouth; the next day the genitals were attacked; from thence the eruption extended until fully three-fourths of the surface became involved. When seen after death, ten days after the onset of the disease, the skin looked as if it had been severely scalded. There were a few accumulations of serous fluid under the loosened epidermis, but for the most part the epidermis hung in partially detached shreds. The palms and soles were but slightly affected. The odor arising from the skin was strong and peculiarly offensive.

My first impression was that the child was a victim of congenital syphilis, this was further strengthened by the fact that the mother was a primipara, therefore more liable to beget syphilitic offspring, and according to her statement the disease first appeared on the parts so frequently implicated in this disease. A careful inquiry, however, failed to bring out any history of syphilis in either parent. On examination, three spots were found on the mother's breast about the size of a gold dollar, reddish in color, and covered with loosely attached epidermis, in appearance resembling some of the smaller lesions on the child. These spots had been present but a few days. Upon the abdomen there was a reddish rash which was not itchy—in fact, she had not been aware of its presence until subjected to examination.

There was no positive diagnosis made at the time, my entry being, "Either syphilis or pemphigus."

Within a fortnight I was again asked by Dr. Gentsch to see a case which he said resembled the one previously seen, and which had been attended by the same midwife.

The mother was a strong woman who had borne three other children who remained healthy. The little patient was plump and apparently doing well, when on the fifth day the disease appeared. At first the child was restless and passed a few greenish stools; a few hours later a reddish rash was noticed on the anterior surface of the neck, just under the chin. The following morning, about fourteen hours after the rash was first noticed, I saw the case.

At this time the eruption was limited to the front of the neck and the upper part of the chest. It was of a dark-reddish color, and on the neck the epidermis was raised into flat, transparent blebs which were easily ruptured. The following day it had reached the umbilicus, extending at the periphery in a continuous wave, its main direction being downward. Over the throat and upper part of the chest, the regions first invaded, the epidermis hung in loose shreds leaving in places extensive raw surfaces. There was present the same sickening, cadaverous odor that had been so marked in the preceding case. On the third day blebs appeared on different parts of the body; the child was failing rapidly and took but little nourishment.

On the fifth day the eruption was at its height. It consisted of a few small blebs, extensive raw surfaces, and floating areas of cuticle on different parts of the body. The face escaped, as did the hands and feet; on the forearms and legs but few lesions were present. Death took place on the sixth day of the disease.

While this case was under observation another under the same midwife was heard of, but an opportunity to see it did not occur. After this it was reported she had been induced to discontinue her vocation.

Although epidemics of this nature are rare, yet medical literature mentions others of a similar kind.

In 1868, Hervieux[1] reported a similar epidemic of pemphigus in the newborn, in France. Ahlfeld,[2] under the title of Morbus bullosus neonatorum, reported an epidemic in Leipzig in 1873. In Italy, also, Padova[3] has, more recently, reported an epidemic. Two years later, in 1878, Ritter von Rittershain[4] reported, under the head of Dermatitis exfoliativa infantum, 297 cases which he had observed during a period of ten years in the Foundling Asylum at Prague. The disease generally appeared between the second and fifth week, rarely before the end of the first week. The main features were: a prodromal stage of dry desquamation, followed by hyperæmia of the lower part of the face, less frequently on other parts of the body, which spread rapidly and was of a light-pink or purplish color. In some, the mucous membranes were also implicated. After this primary stage the eruption varied; sometimes there followed a dry exfoliation, at other times it was characterized by a serous undermining of the epidermis, or the formation of bullæ. The disease usually ran its course in from seven to ten days. Relapses, about eleven days after convalescence, were not infrequent, but they were milder than the primary attack. In typical cases there was no fever nor constitutional disturbance. As sequelæ, Ritter mentions furunculosis and gangrene, which were regarded as due to septic infection. The mortality was 48.82 per cent.

In America, Elliot[5] has given a clear delineation of two cases.

In regard to the nature of this affection, as well as its relation to pemphigus, there has been a varied expression of opinion.

Litten, quoted by Elliot, believes it to be the pemphigus foliaceus of Cazenave. Kaposi[6] agrees with Ritter that it must not be confounded with pemphigus. He regards it as an augmented physiological des-

[1] Hervieux: Pemphigus épidémique des Nouveau-nés. Union Méd., Paris, 1868, 3e s., v. 374–377.

[2] Ahlfeld: Ueber eine Endemie von Morbus bullosus neonatorum in der Entbindungs-Anstalt zu Leipzig. Arch. f. Gynäk., Berlin, 1873, v. 150–159.

[3] Padova: Alcuni casi di Pemfigo in forma epidemica. Gior. Ital. d. Mal. ven., Milano, 1876, xi. 30–48.

[4] Ritter: Centralzeitg. f. Kinderheilk., 1878, Band ii.

[5] Elliot: Amer. Journ. of the Med. Sci., January, 1888.

[6] Kaposi: Pathologie u. Therapie der Hautkrank. Wien, 1881.

quamation of the newborn. Both Brocq[1] and Weyl[2] speak of it under the head of pemphigus, and regard it as such; while Elliot[3] treats of it as a separate affection.

From the foregoing we may conclude:

First: That it is both endemic and epidemic. When endemic, it is confined to certain foundling asylums where the morbific agent which gives rise to it is harbored. When epidemic, it is due either to mediate or immediate contagion. And, as in the cases herein reported, it may be carried by midwives or others in whom the precepts of cleanliness are not scrupulously observed. Further, the lesions on the breast of the mother in the first case were, in my opinion, the result of inoculation from the child; for the baby's mouth was involved during the whole course of the disease.

Second: Its relation to pemphigus may not be definitely known until the etiology of pemphigus is better understood. Suffice it for the present to say, that clinically the cases herein reported are not distinguishable from pemphigus, as illustrated in the following:

Mrs. L., aged fifty-eight years, was seen with Dr. M. Rosenwasser, of Cleveland, February 21, 1888. The patient presented a well-marked eruption which involved various parts of the body. The regions of predilection, however, were the folds of the groins, lower part of the abdomen, and inside of the thighs. The umbilicus looked like a suppurating cavity. In these regions, which were first involved, the skin was denuded of epidermis and presented raw, weeping surfaces with no tendency to heal. On other parts there were a few flabby blebs of various shapes and sizes. The nail of the left great toe had dropped off and the bed presented a suppurating surface. Several of the nails of the fingers were broken off, and, in some, commencing inflammation was noticeable at the root. The mucous membranes of the mouth and nose were excoriated and there was a slight conjunctivitis of the left eye. The bowels were regular, although there had existed at various times a tendency to diarrhœa; urine variable but without any special abnormal condition observed.

The previous history of the case was that menstruation had ceased eight years before at the age of fifty, since which time she had been "nervous," unable to sleep, and constipated. One year previous to the onset of the disease, the patient began to lose weight. The first symptoms of the present malady were noticed six months after this, in the form of excoriations in the mouth, which were persistent. These were followed in four months (two months before I first saw the case) by small blebs which appeared about the genitals and on the arms and neck. These burst readily, leaving moist itchy surfaces. The eruption gradually extended until large raw surfaces were exposed. The mucous membranes also became inflamed and painful, diarrhœa supervened, there was a gradual but marked decline from one visit to another, and the patient died of exhaustion March 20th, about three and a half months

[1] Brocq: Etude crit. et clin. de la Dermatitis exfol. generalisée; also, Traitement des Maladies de la Peau. Paris, 1892.

[2] Weyl: Ziemssen's Handbook of Skin Diseases, 1883.

[3] Elliot: Loc. cit.

from the first appearance of the eruption on the skin, and seven and a half months from the first disturbance of the mucous surfaces.

This case is especially of interest in this connection, because:

First: The eruption was a striking counterpart of that seen in the epidemic of the newborn, and strengthened my belief in their relationship. The first series certainly pointed to contagion, while in this case there had been no exposure to a like disease and no other cases have since developed in the neighborhood.

Second: The eruption, although corresponding to the early stage of pemphigus foliaceus, under which it was classed, also answered in the main to the description given by Neumann[1] of a rare form which he denominates pemphigus vegetans. This tendency of the skin to take on a fungoid growth, or to break down in the form of gangrene, as has been previously noted, may, it seems to me, be regarded as an anomaly or sequel rather than a distinct variety of the disease.

TREATMENT.—This naturally divides itself into constitutional and local. Arsenic, once the panacea for all the ills to which the skin is heir, has been forced, step by step, to yield the palm, yet according to Mr. Jonathan Hutchinson it still retains the distinction of being a specific for pemphigus. Dr. Crocker, in his admirable work, believes arsenic controls the skin lesions without affecting materially the course of the disease. In children he thinks it deserving the name ascribed to it by Mr. Hutchinson. In observing the treatment of pemphigus in various hospitals, as well as in the cases occurring in my own service, I have never observed the slightest benefit from arsenic. This forces me to the conclusion that as yet we have no trustworthy specific for pemphigus.

With this in view the internal treatment should be conducted along the lines of general therapeutics. Food should be selected which is easily digested, although possessing the elements for proper nutrition, such as milk, eggs, etc. In pemphigus, above all diseases, tonics are indicated. Iron and arsenic, the latter in small tonic doses, and in selected cases cod-liver oil, will afford the best means at our command.

Locally, the general hygienic environment should be looked after, fresh air and sunlight should never be forgotten, and, in an epidemic, isolation and disinfection, such as recommended for smallpox and erysipelas. Then, the blebs should be punctured and the sac flushed out with some bland disinfectant, such as the saturated solution of boric acid. This is followed by one of the many applications, which above all must be of a bland, soothing nature. Everyone who has been in the Allgemeines Krankenhaus, in Vienna, is familiar with the continuous water baths there used in the treatment of pemphigus. This undoubtedly constitutes an agreeable and efficient local treatment, but unfortunately

[1] Neumann: Viertilg. f. Derm. u. Syph., vol. xii., 1886.

the necessary appliances are not obtainable in many private houses nor even in most hospitals.

An ordinary bath-tub may, however, be utilized for short periods, when a starch, bran, or alkaline bath may be used with great relief to the patient and some benefit to the skin.

Of lotions, the glycerole of tannin has given the most marked benefit. It may be used in the strength of one part to three of distilled hamamelis or water. This strength may be increased to equal parts of the glycerole of tannin and camphor-water. When the eruption is limited to small areas, the glycerole of the subacetate of lead and glycerin, of each one ounce added to a pint of water, often acts admirably. When itching is present resorcin or carbolic acid are the best agents we possess for allaying it. These are used in the form of lotions, one drachm to four ounces of water. Sometimes cloths saturated with a bland oil prove most grateful to the patient.

During convalescence, especially in the exfoliative form, some emollient, such as vaseline or the benzoated zinc ointment, is to be recommended.

A CASE OF LOCOMOTOR ATAXIA BEGINNING IN THE ARMS.

By J. K. Mitchell, M.D.,
of Philadelphia.

G. V., aged forty-seven years; machinist; single; resident of Nashville, Tenn.; consulted me on November 7, 1891, and gave the following history:

He had never had any serious illness, though commonly suffering from headache from childhood. In 1879 or 1880 he contracted syphilis, which, he says, was thoroughly treated for a long period of time, but he had some secondary symptoms in the mouth and a superficial discoloration of the skin.

In 1885, six years before he was seen, he first noticed a numbness in the middle finger of the right hand. Upon consulting a physician the old history of chancre came out, and he was treated with electricity and iodide, which did not stop the course of the disease, for in two weeks the whole left hand had become numb. Entire loss of touch-sense followed rather rapidly in the left hand and at a longer interval in the right. A deep prick, a burn, or a hard squeeze was perceived; but a slight touch, a gentle prick, or mere warmth was unnoticed.

This disturbance of skin sensation gradually extended to the elbow in both arms, and within two years of its first beginning he suffered from flying pains in the back of the neck, in the hands, and occasionally through the legs. In the upper extremities these were felt in the whole of the hands and in the thumb-joints. Incoördination began to be noticed at about the same time that the pains first grew troublesome.

Present condition: Headache is very constant, and whereas formerly it was chiefly localized about the inion it is now general. There is pain up and down the spine and almost constant ache and cramp in the

stomach, which is made worse by medicine of any kind yet taken, or by the liquor which has occasionally been given to him as a palliative. His pain is not affected by food; he has no indigestion, and has on one or two occasions had an increase of the cramp, lasting for a long period. In June, 1891, for instance, a violent attack came on, apparently without cause, with cramp referred to the stomach, and persisted for two weeks. The first two fingers and thumb of the right hand have enough sensation to be useful, but the others and the left hand are practically useless, so entirely without touch-sense are they. The pain in the hands is often excessive and accompanied by a distinct fibrillary twitching in all the small muscles of the hand. There is marked incoördination in the hand and forearm movements. He cannot bring his forefingers together with his eyes shut, and does not know whether a small object is in his grasp or not until he sees it; but, as stated above, he uses the first two fingers and thumb of the right hand better than those of the left. The feeling of numbness and the loss of sensation stop abruptly at the elbow, above which sensation is not at all impaired. There is no tenderness over the nerve tracks in the arm. In the feet, touch and localization are perfect. Pain-sense is slightly impaired, and there is a constant feeling of numbness in the feet.

A difficulty of balance was first noticed in 1889, most marked, as usual, in the dark. This has grown worse very slowly. It was at first irregular, and not so constantly bad as now. Knee-jerk absent; no reinforcement; muscle-jerk in legs absent; elbow-jerk absent; muscle-jerk in forearms good; cremaster-reflex good; no ankle clonus; sexual desire is diminished.

His pupils react well to light and to accommodation. The left is a trifle larger always than the right. Station: sway is almost entirely forward and to the left; on careful measurement it was found to be ordinarily about two inches forward and to the left, even when standing with his eyes open. With closed eyes this was a little increased. Electric contractility is everywhere unchanged. The general nutrition is excellent and his muscles large and firm.

His muscle-sense was examined with small weights. In the right hand he readily distinguished a difference of one-half ounce. In the left hand this was not perceived. He could not perceive at all the presence of weights of about one-half drachm in either hand.

The lumbar spine is slightly tender to a blow throughout its whole extent, but there is no deformity. There is no urinary or bowel trouble. The patient is an unusually large and powerful man and has suffered no diminution of his muscular ability. He is quite bald, but he was so many years before having syphilis.

A diagnosis of locomotor ataxia, beginning in the arms, was made, and late in October he was sent to Dr. de Schweinitz for a report on the condition of his eye-ground for confirmation of this opinion. Dr. de Schweinitz wrote as follows:

"The patient has discolored optic disks, undue fulness of the central lymph sheaths, and haziness of the margins. The pupils are unequal: the right nearly round and two millimetres in diameter, the left in area an irregular oval and three millimetres in its longest diameter. The pupil reactions are normal; there is no paralysis of the external eye

muscles, but the relation between the abducting and adducting power is greatly disturbed, adducting being but 15° while abducting is 6°. At six metres there is insufficiency of the internal recti half a degree, while in accommodating there is insufficiency of the external recti of three degrees. Central vision is normal, by correction of a slight hypermetropia. The field is symmetrically contracted and concentrically for form and color."

This examination confirmed the diagnosis of a rare form of tabes. The patient, a poor man, was advised not to go to the expense of staying away from home for treatment, but, after instruction as to how to use suspension, he was put upon nitrate of silver with massage and electricity, which he was able to secure at his home.

The course of the case in this patient was somewhat unusual, even apart from the manner of its beginning. The sudden onset with rapidly spreading and increasing loss of sensation in the upper extremities, sharply limited to the forearms, even six years after its first appearance, is peculiar; it was not until four years had passed that any disturbance of locomotion was observed, and even at the date of examination this had not made his gait noticeable, while sensation for touch and locality was perfect in the legs and feet. No certain information could be gotten from the patient as to the date of commencement of the ocular symptoms. These, indeed, were not such as would have attracted much the notice of an ignorant person.

Very little attention is paid to this form by the numerous authors who have written upon ataxia. In the several contributions of Charcot I can find no special mention of it,[1] and in a careful search but one fully reported case has been found. Hammond does not mention it, nor Ross, Leyden, or Erb; in Vulpian's *Maladies du Système Nerveux* it is spoken of as an occasional form of appearance of the disease, but no stress is laid upon its rarity.

The only case reported in this country, so far as my examination of the subject has allowed me to discover, is the one published in the *Journal of Nervous and Mental Diseases* (April, 1888) by Dr. S. Weir Mitchell. Recognition of this form should be easier than of the ordinary mode of onset, as slight difficulties of co-ordination in the hands would be apt to strike the patient much more than similar trouble with the lower limbs.

[1] Charcot quotes (Leçons sur les Mal. du Syst. nerv., 2e Série: Anomalies de l'Ataxie locomotrice) a case reported by Pierret, in which the symptoms—pains, incoördination, etc.—were developed to a very high degree in the upper extremities, but only as part of a general ataxia. The case is cited as an example of the pathological conditions in ataxia.

A CASE OF FRACTURE AND DISLOCATION OF THE SECOND LUMBAR VERTEBRA, WITH OPERATION.

By Richard C. Newton, M.D.,
MONTCLAIR, N. J.;
ATTENDING SURGEON MOUNTAINSIDE HOSPITAL; SURGEON TO THE NEW YORK AND GREENWOOD LAKE RAILROAD.

With a Report of the Microscopical Examination of a Section of the Spinal Cord.

By Henry Power, M.D.,
NEW YORK CITY;
PATHOLOGIST TO THE MOUNTAINSIDE HOSPITAL.

H. P., aged twenty-four years; single; teamster; born in New Jersey. Has a slight admixture of African blood, although he is very nearly white. Admitted to the Mountainside Hospital, January 12, 1893.

Previous and family histories not of especial significance, except that the patient claimed to have come of healthy stock, and that he had never suffered from any serious illness in his life. He distinctly denied all venereal lesions.

On admission the patient was quite helpless and was suffering acutely from an injury to the back, which he had sustained in the following manner: He was driving a team of horses attached to an excavating wagon, of which the driver's seat was very high. In attempting to drive into a barn he did not notice, until it was too late, that there was almost no space between the jamb of the door and the seat of the wagon. There was some ice upon the road and upon the approach to the barn-door, and the patient's horses were smooth-shod. As the latter approached the door they began to slip, and naturally quickened their pace to get inside the barn. The patient tried to hold them back, and finding this impossible, he dropped his reins and tried to slide or roll off of his seat. In an instant he was caught between the door-jamb and the high back of the wagon-seat and pinned there until the team had pulled the wagon into the barn.

He fainted away from pain and shock. After the door-jamb had been passed there was more room and the patient was pulled down from his exalted position and medical aid summoned. He thought that there was rather more than six inches of space between the door-jamb and the back of the wagon seat.

When admitted to the hospital he was perfectly conscious, and, after morphine had been administered hypodermatically, passed a fairly comfortable night. The next day he was not suffering any pain. His bladder was full of urine, of which he had passed none since his accident. He was completely paralyzed as to both sensation and motion in both lower limbs. The line of anæsthesia in front was at Poupart's ligament, and behind at the upper extremities of the gluteal eminences—thus corresponding to the seventh zone of anæsthesia in Prof. Starr's tabulation (The Amer. Journ. of the Med. Sci., July, 1892). According to the Professor's observation this line of anæsthesia indicates a lesion of the cauda equina and filum terminale at the level of the second lumbar vertebra, and in my case the injury was afterward proved to be

at this point. There was complete loss of the reflexes, both deep and superficial, below the seat of the injury. The patient could not feel the passage of the catheter, although he felt relieved after the water was drawn. The surface temperature was apparently somewhat raised over the lower limbs, but of this there was no certainty at the time, inasmuch as it took a day or two to procure a surface thermometer. The feet were also warm. But the ankle clonus could not be elicited. Although the rigidity of the joints of which Starr speaks (*ibid.*) was noticed, it was impossible by tickling or pricking of the soles of the feet to awaken any sensation or provoke any movement, reflex or otherwise. There was no priapism. No emesis. There was at this time no deformity nor bulging of the spinal column. No crepitus could be detected. None of the vertebral spines seemed to be missing or displaced. No bruises, lacerations, nor ecchymoses—in a word, no evidence of external violence was found on the man's body, although carefully looked for, and none subsequently appeared. It should be stated in passing, that the man was a short, stocky, heavily muscled person, and his spinal column was well walled in with firm muscular tissue.

For the first three days after admission the temperature in the mouth was 101° F.; pulse 80 to 86. Two drachms of compound licorice powder produced a copious stool, of which the patient was unaware. On the morning of the third day some bulging backward of the spine was noted in the upper lumbar region. A plaster jacket was put on the patient, extending from the axillæ to the hips. During its application he complained strenuously of pain, and twice nearly or quite fainted away, so that he had to be let down from the apparatus in which he was suspended and laid flat upon his back on the floor until he revived.

The plaster jacket seemed to make him somewhat more comfortable and he could pull himself about in the bed by his arms. He complained more or less constantly of pain in the abdomen. Some suspicious-looking round, black spots appeared on his heels, and a number of small, oval, red ones. His urine was drawn three times daily with a soft catheter.

For three days careful observations of the surface temperature were made with a Seguin's surface thermometer, about six minutes being consumed in an observation. They were as follows: Temperature on front of abdomen near umbilicus, 99°. Front of left thigh between hip and knee, 97°; right, 94⅖°. Front of left arm between shoulder and elbow, 97°; right, 98°. Front of left thigh between hip and knee, 99°; right, 97°. Front of right thigh between hip and knee, 96⅖°; left, 98⅘°. Front of right arm between shoulder and elbow, 97⅘°; left, 95°. As these results seemed inconclusive the observations were discontinued.

After a period of eight days without a movement from the bowels, the patient experienced great distress from tympanites of the abdomen, which became so excessive as to embarrass the respirations. Accordingly two drops of croton oil were given, and were followed in an hour and a half by an exceedingly copious action of indescribable fetor. This gave temporary relief, but was the beginning of fecal incontinence. About this time several small blebs were noted about the feet and ankles.

On the 27th of January, after a consultation of the entire hospital staff, an operation was determined upon in the hope that something might be accomplished for the relief of this man's pitiable condition. The uncertainty and danger of the proposed operation had been explained to the patient and his friends and their full consent to it obtained.

It seemed better not to wait any longer, because the patient was daily losing ground, and we feared that he would not be in a condition for operation if a period of six weeks was allowed to elapse, as suggested by Dr. White and others, before undertaking an operation. Accordingly, I proceeded to operate with the assistance of my colleague, Dr. Love, and Drs. Ward, Whitehorne, and Francis, of the hospital staff. The plaster jacket was cut up the back and removed. There was a moderate posterior bulging of the upper lumbar vertebræ, and the most prominent of these seemed to be the second. We had agreed to do an Abbé's operation. A longitudinal incision, six inches long and one-half inch to the right of the vertebral spines, was made, beginning at the tenth dorsal vertebra and extending to the sacrum. The tissues were divided down to the laminæ of the vertebræ. It was then observed that the second lumbar vertebra was displaced by having been rotated to the left, so that the hollow between the spinous and right transverse processes of this bone was nearly or quite in the median line of the back. The spinous processes of the remaining vertebræ were in their proper alignment. A strong hook was employed, and several attempts were made to rotate this bone into its proper place, but without success, although an extraordinary amount of force was used.

The arches of the first and second lumbar and the right transverse process of the latter were then cut away with a long pair of bone-forceps, exposing the medullary canal. The spinal dura mater had been torn by the original injury, so that only a small portion of the segments of the spinal cord that we had exposed was covered by its membranes. In fact, only a triangular-shaped piece of the dura mater, with its hypothenuse running from above downward and from right to left, was found. This covered probably a fifth of the two segments; the remaining four-fifths of the dura mater we could not find. Of the cord itself a fusiform enlargement was observed, which probably increased the diameter of the cord by 50 per cent. This was purplish in color. No spiculæ of bone and no blood-clots were observed in the medullary canal; nor so far as could be ascertained was there any pressure being exercised upon the substance of the cord. The patient now began to exhibit unmistakable signs of collapse. The operation had been long and bloody, and inasmuch as it seemed that little good and much harm might follow further manipulation, it was decided to close the wound and do nothing further. Considerable difficulty was experienced in stopping the hemorrhage, which was venous in character and welled up between the cut surfaces of bone. Affusions of hot water and pressure from sponges wrung out of boiling water finally stanched the flow of blood, and the wound was closed. A strip of iodoform gauze was used for a drain. The deep sutures were of catgut, specially prepared and kept in closed glass tubes. The muscular tissues were brought together with sutures of silkworm-gut. Every approved antiseptic precaution had been observed. Abbé's operation had, of course, proved impracticable owing to the displacement of the second lumbar vertebra.

The patient was profoundly shocked by the operation. The next day his pulse was 132 and thready; temperature, 102° F.; and respiration, 28. In forty-eight hours the temperature fell to 97⅕°, and then rose again to 102⅖°, at which point it remained until death. On January 31, 1893, five days after the operation, the patient had rallied somewhat and we felt some encouragement about his chances of recovery, albeit

there had been no improvement whatever in the symptoms caused by the accident. On February 1st, however, his condition again became alarming, and he died very quietly shortly after midnight, five and one-half days after the operation, and twenty-one and one-half days after the injury.

An autopsy was forbidden. A hurried and surreptitious examination of the wound, however, revealed the following condition of things: There was no odor and almost no pus about the cut surfaces. A thin coating of lymph was noted over the exposed muscles, and indicated a healthy healing process. There was considerable laceration of the deeper layers of muscles from the original injury and from the use of the cutting forceps. The intervertebral substance between the first and second lumbar vertebræ was fractured nearly through. The body of the second lumbar was broken—the line of fracture beginning near the middle and running downward and forward to near the junction of the anterior and lower surfaces. A fracture of the intervertebral substance between the second and third lumbar, and of probably at least two of the articular processes of these vertebræ, must have existed, although from lack of time all the lesions could not be accurately made out. The swollen and discolored portion of the cord noted at the operation was removed and turned over to Dr. Henry Power, the pathologist of the Mountainside Hospital, for examination. His report is as follows:

"The portion submitted for examination consisted of many of the roots forming the cauda equina, and also some more compact material among the fibres. The relations of the tissue to surrounding parts were in no way indicated. The tissue was hardened in bichromate solution of 2½ per cent., and then in alcohol. Sections examined by Weigert stain and picro-acid fuchsin. The compact material above referred to was not part of the cord, as had been hoped, but consisted of blood-clot and some adhesions binding together the nerve roots. All the nerve fibres showed with the Weigert method the various stages of degeneration. No evidence, however, of the exact location of the injury causing the same was obtainable from the specimen."

The explanation of the displacement and rotation to the left of the single vertebra (the second lumbar) seems to me to be that the patient was struck when leaning forward and to the right side, as he endeavored, when too late, to throw himself from his seat to the ground. (He would naturally sit on the right end of the wagon seat to drive, and would also naturally get on and off his wagon on the right side.) The habit of the colored race of ducking the head when danger threatens is well known; he therefore ducked his head and was struck by the door-jamb upon the right shoulder. His spine was already bent forward as much as possible as he was endeavoring to slide off of the seat and avoid the door-jamb at the same time. The blow broke his back at the point of the greatest curvature, the second lumbar, and also, since the legs were now held fast by having passed under the door-jamb, the same force displaced the entire spinal column above the fracture to the left. As, however, the wagon passed on, the man's body was drawn between the high back of the wagon-seat and the door-jamb, and since it could not pass with its transverse diameter perpendicular to the opposing surfaces, the body was forced on to the back, and the lateral dislocation was by

this means reduced while the body was passing under the door-jamb. The second lumbar vertebra, however, was prevented from resuming its place with its fellows, because it was held fast by the high seat-back, a board about an inch wide. Thus the intervertebral substance between the second and third lumbar must have been fractured and the articular processes broken, if they had not been broken before. A lateral displacement with rotation would also account for the peculiar diagonal tear to the theca, and the partial reduction of the dislocation would account for the disappearance of the missing portion of the membrane, which was probably folded away against the side of the bony canal under the injured cord. Whether the above explanation be the true one or not, it is plausible.

It is true that the best authorities seem united in the belief that a total abolition of the reflexes signifies a complete transverse destruction of the cord, and also many of them hold that in cases exhibiting these symptoms an operation is contra-indicated. But considering the low seat of the lesion in my case, there is good authority for operating, as, *e. g.*, Prof. White, in the able summary of the "Surgery of the Spine," already referred to (*Ther. Gazette*, October, 1891), says (p. 680): "As to the region involved, both theoretical and statistical considerations show that the lower dorsal and lumbar vertebræ are those which can be operated on with the greatest hope of success." And again (p. 682): "That it is unsafe to say in any given case that the cord is *hopelessly* damaged would seem to be fairly well established by the results of such cases as Horsley's, Macewen's, and Lowenstein's, so that operation should scarcely be refused on that score alone." And again (p. 683) he quotes Chipault as saying "Trephining is absolutely indicated . . . when there is compression of the filum terminale from any cause." And finally Dr. White lays down amongst the conclusions to his paper the following: "Resection of the posterior arches and laminæ should be resorted to in all cases in which there is compression of the cauda equina from any cause." Having then so good authority for operative interference in this case, I cannot think that any injustice was done our patient by submitting him to an operation which, while it was by no means successful, has taught some valuable lessons, and at the worst only abridged by a comparatively short period a life already doomed, and thereby doubtless eliminated much suffering.

The increasing number of reported operations undertaken for the relief of spinal injuries is, in my opinion (as Prof. White also holds), rather encouraging than otherwise to those surgeons who favor surgical interference in these cases; and who shall say that Sir Astley Cooper overstated the truth when he asserted that if one patient out of one hundred could be saved (by operation), it would be better than could be hoped for from Nature alone?

REVIEWS.

AN AMERICAN TEXT-BOOK OF GYNECOLOGY, MEDICAL AND SURGICAL, FOR PRACTITIONERS AND STUDENTS. By HENRY T. BYFORD, M.D., J. M. BALDY, M.D., EDWIN B. CRAGIN, M.D., J. H. ETHERIDGE, M.D., WILLIAM GOODELL, M.D., HOWARD A. KELLY, M.D., FLORIAN KRUG, M.D., E. E. MONTGOMERY, M.D., WILLIAM R. PRYOR, M.D., GEORGE M. TUTTLE, M.D. Edited by J. M. BALDY, M.D. With 360 illustrations in text and 37 colored and half-tone plates. Pp. xxi., 713. Philadelphia: W. B. Saunders, 1894.

THE tendency of American publishers to multiply the number of popular systems and text-books, representing the combined work of several authors, has been unfavorably commented upon by foreign critics. In the case of some of these, it must be admitted, the *raison d'être* has been difficult to discover. When, therefore, such a work appears which even the most critical must admit is a distinct addition to the literature of gynecology, it cannot be dismissed with the ordinary trite expressions of approval, which always cause the author (conscious that he has put his best work into his book) as much depression as positive blame from an appreciative critic, who has at least done him the honor of reading it.

The volume before us must be judged from the editor's standpoint—not as a treatise on gynecology, but as "a working text-book for physicians and students." Viewed in this light, we predict that it will be unusually successful. The collaborators are well known as aggressive, enthusiastic teachers, progressive surgeons, and clear, forcible writers, a combination which ought to be irresistible. The novel plan has been adopted of endeavoring to sink each author's individuality by harmonizing the articles in accordance with the general plan—an original and not unattractive feature. With some exceptions, the editor has been quite successful in the accomplishment of this by no means easy task. The arrangement of the subject-matter savors more of a foreign than of an American work on diseases of women.

The eighteen chapters, or, more properly, subdivisions, are arranged in the following order: Gynecological examination and operative technique, menstruation, sterility, anomalies, genital tuberculosis, diseases of the vulva and vagina, diseases of the uterus, lacerations, fistulæ, displacements, malignant disease, uterine neoplasms, pelvic inflammations, ectopic gestation, diseases of the ovaries and tubes, diseases of the genito-urinary tract, and a concluding section on after-treatment in gynecological operations. It must be admitted that, at least as concerns the last half-dozen sections, the sequence is not as smooth as it might be, possibly because the headings are a little misleading. For example, the chapter on "Uterine Neoplasms" really includes fibroids only, malignant growths having

been discussed in the previous sections. Again, the heading "Diseases of the Ovaries and Tubes" is inexact, since tubal affections (with the exception of anomalies) have already been thoroughly considered in connection with the subject of pelvic inflammation. The excellent concluding chapter on after-treatment is, with the addition of the treatment of cœliotomy cases, really a summary of the paragraphs on the same subject which follow the descriptions of various minor gynecological operations. The latter arrangement is certainly more natural, as well as more convenient for the general reader.

We commend the introductory sections on gynecological examination and operative technique, which are clear, terse, and to the point. The recommendation to examine under anæsthesia in every doubtful case is one which meets with our hearty approbation; indeed, teachers of gynecology cannot too strongly caution their students not to be misled by the prevailing statements as to the ease with which the pelvic organs can be mapped out by the bimanual in office practice. More emphasis should have been placed upon the value of palpation in the lateral position, which is certainly a valuable aid in the diagnosis of obscure enlargements of the adnexa and peri-uterine tissues. The directions with regard to the use of the sound (page 34) are wise and conservative.

In the introduction to the chapter on technique we note several apothegms which are worth remembering. For example, technique is defined as "the basis or pervading principle of the work," as the result of "individual operations crystallized in various forms," "the quickening element in the whole field of modern gynecology," etc. We have no criticism to offer on this chapter, which contains a large amount of useful information condensed within a small space. The illustrations are nearly all good.

Menstruation and its anomalies are discussed clearly and intelligently, an excellent feature of this chapter being the attention paid to the important subject of the menopause and its disturbances.

The chapter on inflammatory diseases of the uterus is written in a vigorous style and is eminently progressive, especially the section dealing with septic endometritis. The term "endometritis" has become so wedded to the condition which is really hypertrophy of the endometrium that, although the author recognizes its erroneous application, he does not feel justified in abandoning it. The description of curettage is clear and graphic. We commend it to the practitioner as an ideal picture of a minor gynecological operation as it should be done, according to the rules of modern aseptic surgery. The section on curettage in acute pelvic inflammations may be a little too progressive for conservative readers (at least in private practice), who may not be disposed to go so far as the author in his belief that it "is positively indicated in every case of acute tubal and peritoneal disease, when there is even a suspicion that the infection originated in the endometrium—that is, in the majority of cases." The writer summarizes, on page 229, in the following vigorous language: "One of three methods must be adopted with these cases: either poultices and hot douches, curettement and treatment of the uterus as any septic cavity, or a primary cœliotomy. The first is the method of the midwife (!), and merely allows the infection to work its will in the pelvis; the second is surgical in every sense of the word; while to adopt the third in every case stamps a man as blind to reason

and to the work of other men, and as willing to open a fellow-being's abdomen rashly and unnecessarily." We have no comment to add except to express grave doubt as to the ability of the general practitioner to select cases in which he would not be more likely to do harm than good.

The operations for the repair of lacerations of the cervix and perineum are rather briefly considered, and the criticism must be offered that the illustrations accompanying the description of the former are not exactly after nature. The writer is evidently not an enthusiastic advocate of the operation, since he remarks rather skeptically that "it may well be doubted in many cases if the rest has not been the most important, if not the sole, factor in the recovery." We have not met with many patients in either private or hospital practice who would be willing to allow the cervix sutures to remain *in situ* for three months, during which time matrimonial relations are interdicted. Doubtless the latter restriction would be beneficial if it could be secured.

In the excellent chapter on malpositions we note only a few minor blemishes; for example, the directions for introducing a pessary. We have already held that the general practitioner would be less likely to avoid the error of not replacing the uterus first, against which the writer cautions him, if the instrument were inserted when the patient is on her *side*. Curiously enough, Figures 224 and 225 represent the way in which a pessary should *not* be used, *i. e.*, with the organ still retroverted. The various operations for retroversion and prolapsus are well described. Fig. 252 does not, of course, represent the method of colporrhaphy described by Emmet, but the simple oval denudation of Dieffenbach.

In the section on malignant diseases we are impressed in reading the admirable description of vaginal hysterectomy with the fact that the writer is more at home with the radical than with the palliative treatment of carcinoma uteri. Witness the recommendation to amputate and suture the cervix as in Figs. 262–267. Schroeder's operation (Figs. 266 and 267) is hardly applicable to malignant disease; in fact the writer characterizes it as an "illegitimate procedure." No one who had followed carefully Dr. Byrne's work with the galvano-cautery would dismiss his method with the remark that "the only commending feature of the procedure is its bloodlessness," or that amputation "can be performed more safely" with the Paquelin cautery. We have already had occasion to commend the beautiful illustrations showing the use of clamps and ligatures in vaginal extirpation. On page 394 we find superficial papilloma of the ovary described as identical with carcinoma, while at the top of the following page we read of similar papillary growths "soon becoming carcinomatous," a statement which is calculated to confuse the general reader, especially as the important distinction between the two, from a surgical standpoint, is not explained.

The chapter on fibroids (misnamed "Uterine Neoplasms") is essentially surgical, the writer advocating total abdominal extirpation. His description of the operation is lucid and intelligent, the accompanying illustrations being especially helpful. To the abdominal surgeon the arguments presented may be sufficiently convincing; whether the radical operation should be recommended to the general practitioner as the treatment *par excellence* we do not attempt to decide.

The section on pelvic inflammation is the longest in the book (eighty pages), and, as explained in the introductory sentence, "is intended to

include all those pelvic inflammatory diseases which involve the Fallopian tubes, the ovaries, the pelvic peritoneum, and the pelvic cellular tissue." It is a thoroughly practical article, especially the section on pathological anatomy, and is evidently written by one who has studied the subject in the dead-house and at the operating-table and has not built up theories in the library. Equally practical are the paragraphs on symptoms. The important subject of treatment is handled in a most satisfactory manner. We have never read a more careful and conscientious description of abdominal section for the removal of diseased adnexa. The indications, difficulties, and subsequent results of the operation are described in the most candid and convincing manner. Altogether this chapter is deserving of warm approval. Ectopic gestation is well discussed, especially the sections on diagnosis and treatment. Ovarian cysts and ovariotomy receive careful attention, the operation and complications being described in a clear, practical way. The chapter on diseases of the urethra, bladder, and ureters covers the ground remarkably well, considering the necessary amount of condensation, the concluding section on the ureters being especially interesting and instructive. We have already referred to the chapter on after-treatment, and again commend it as containing just such precise information with regard to the minor details as the general reader generally looks for in vain in most surgical works.

One cannot do justice to such an extended work in a hasty review. We have merely sketched in outline its general plan and character. Though uneven and not always coherent (as every system by different authors must be), it must command attention and respect as a worthy representation of our advanced clinical teaching. Conservative gynecologists will doubless say that many of the statements are too radical and dogmatic for the student and practitioner. Some of the writers recognize only one way of doing things, and that is their own; but it is refreshing to meet with a book in which, whether right or wrong, the author has the courage of his convictions and speaks them in no uncertain tone. The editor is to be congratulated on his success in the accomplishment of a task more difficult than that which usually falls to the lot of that unfortunate individual. The plan of the work was bold and novel, and we believe that its success will prove that it is thoroughly *en rapport* with the spirit of the age, the motive force of which is the energy of youth.

As to the internal construction of the book we may add that the style throughout is clear, concise, and forcible. No words are wasted, nor does a single writer turn aside from his subject to indulge in self-laudation. There is a singular unanimity in this respect which fully compensates for any unevenness or repetition. The type is large and the illustrations, to a considerable extent, original, although the latter vary greatly in their excellence. The half-tones are much more pleasing to the eye than are the colored plates, which do not add to the attractiveness of the book from an artistic standpoint. H. C. C.

THE STUDENTS' DICTIONARY OF MEDICINE AND THE ALLIED SCIENCES. Comprising Pronunciation, Derivation, and Full Explanation of Medical Terms, together with much collateral descriptive matter, numerous Tables, etc. By ALEXANDER DUANE, M.D., Assistant Surgeon to the New York Ophthalmic and Aural Institute; Reviser of Medical Terms for Webster's International Dictionary. Pp. 650. Philadelphia: Lea Brothers & Co., 1893.

THE enormous development of sciences tributary to medicine and the constant increase in nomenclature are sufficient reasons for the production of a new dictionary. While this one is for students, according to its title, it aims to include every word which a physician is likely to encounter in the medical literature of the day. How well this purpose is accomplished a careful examination cannot fail to show. In addition to ordinary material, it is especially rich in chemical and biological terms of recent coinage, particularly those of modern organic chemistry. Even many trade names of recent date will here be found, such as salophen, antifebrin, europhen, listerine, aristol, and the like. The object sought is to make the book of practical use, and that object is accomplished.

Many anatomical data are exhibited in tabular form. For example, canals, joints, muscles, arteries, nerves. By the method adopted it is possible to give many details in a form convenient for reference. For example, each artery has opposite its name its origin, lateral branches, terminal branches, and their distribution. Each joint has its arterial supply, nerve supply, and function given, as well as the bones and ligaments which enter into it. Useful words of the class which includes *centrad*, *cephalad*, *meson*, and *mesial* have not been omitted. One may remark, however, under *centre*, a failure to locate Broca's speech-centre on the left side, though the cross reference is correct. One fails to find also, among varieties of hernia, that described by Littre.

Thirty-four pages are devoted to *Bacteria*. Here may be found in condensed tabulated form an enormous amount of information which cannot ordinarily be found in text-books. In the table opposite the name of each organism appears in parallel columns its origin and morphological characters, the temperature at which it flourishes, and its properties. An interesting list follows indicating those diseases which are produced by bacteria, and giving also those organisms which appear to be simply associated with disease. Under each drug is given a summary of its uses, together with the preparations which are official in the United States, Great Britain, and Germany. The doses are given in the metric system as well as in that more generally in use.

An attempt has been made to relieve the embarrassment, felt by all, from the common use of the names of men in connection with operations, diseases, etc. One may here find a definition of Loreta's operation, of Tait's, of Battey's and of Hunter's. So, too, he will find briefly described Hutchinson's teeth, Horner's muscle, Bigelow's ligament, Bandl's ring, the Banting treatment, Senn's plates, and McBurney's point. However much one may decry such use of proper names as being unscientific, it is a convenience to find them in one's dictionary. Of additional value is an abbreviated description of the man whose name is

used. One is reminded, for example, under *Goulard's cerate* that Goulard was a French surgeon of the eighteenth century; and under *Bauhin's valve*, that Bauhin was a French-Swiss anatomist of the sixteenth century.

In spelling, the author designs to follow usage rather than analogy, according to his preface. Simplicity, at times, yields to derivation. He prefers the diphthong in "hæmorrhage" and all compounds similarly derived. He prefers "chorioid" to choroid, "anthelminthic" to anthelmintic, but gives "feces" rather than fæces.

The attention to minute detail necessary in the presentation of a work of this character is little appreciated by the general reader. That a book so accurate, so convenient in size, and withal, so complete, has been produced is creditable alike to author and publisher. G. E. S.

THE DISEASES OF THE MALE ORGANS OF GENERATION. By W. H. A. JACOBSON, M.Ch. Oxon., F.R.C.S. With eighty-eight illustrations. Philadelphia: P. Blakiston, Son & Co., 1893.

JACOBSON, an assistant surgeon in Guy's Hospital, is already favorably known on this side of the Atlantic because of his excellent work entitled *The Operations of Surgery*, a work which compares well with Treves's or any other standard productions on the same subject. It is only fair to expect from such an author a book of more than ordinary merit, and in this expectation the reviewer is not disappointed. Curling's classical monograph, the scholarly volume contributed by Monod and Terrillon, indeed, the whole literature of the subject, has been carefully traversed.

In regard to the functional efficiency of a retained or ectopic testicle, Jacobson holds that before such a testicle has been subjected to repeated attacks of inflammation it is still capable of secreting healthy seminal fluid, and quotes cases in point. Later, however, degeneration takes place. In regard to the treatment of misplaced and inflamed testes, this, the author holds, should be palliative at first. If inflammation recurs, choice of operation will lie between transplanting and castration. Where the patient has passed adolescence, the latter operation is the one of choice. The complications of misplaced testes are more fully considered than in any work with which the reviewer is familiar. The operation of orchidopexy is described in detail.

The chapter on hydrocele and its complications is classical. It is pointed out that, in the palliative treatment of hydrocele, septic inflammation may occur from the use of a dirty instrument, and at least one case of a death is recorded from this cause. In the radical cure, iodine and carbolic acid are the injection substances of choice. From a statistical study, Jacobson states that in a cold climate there may be expected about 8 or 10 per cent. of relapses after injection. As to the technique of this injection operation, it is advised to inject about five grains of cocaine solution in a drachm of water; in about five minutes the iodine is injected without pain or fear of constitutional symptoms. At least one death has been recorded from the injection of a quantity of cocaine no larger than that advised by the author. Strapping the testicle is ad-

vised in from the fourth to the fifteenth day after the injection, and is to be repeated every few days for a few weeks, and after this a suspensory bandage is to be worn.

Antiseptic incision is advised where iodine has previously failed, where the sac is large and has thick walls, and in certain cases where the hydrocele is complicated by hernia. The varieties of hydrocele are described at length, and hæmatocele receives due consideration, particular attention being called to the condition of the testicle in many of the long-standing cases.

Under the head Epididymo-orchitis, the disease commonly classed as epididymitis is discussed. The treatment is that commonly advised; ice being recommended during the first two days. Immediate puncture of the vaginal tunic is advocated when acute hydrocele is present and there is severe pain. Puncture of the testicle itself is strongly condemned, except in cases of pus in this gland. The application of silver nitrate, one drachm to the ounce, painted with a camel's-hair brush over the surface of the swelling, is also advised. In discussing the varieties of orchitis, the author does not omit to include that form of inflammation which develops in immediate connection with acute tonsillitis.

The section on Tubercular Testis is one of the best in the book. In summarizing the treatment, Jacobson advises general hygienic directions in the early stages. In a certain number of well-to-do patients it is safe to wait until softening has occurred; then the sharp spoon is employed. Castration is advised when erasion fails, when the body of the testicle is involved, and when hydrocele, especially the purulent form, is present. It is stated that tuberculosis of the testicle is more common in infants than is usually thought to be the case. The operation of castration is fully described.

In discussing Masturbation, the author calls attention to the fact that this habit is by no means rare in infants, and recommends as a part of his treatment circumcision without an anæsthetic. Under the general heading, Diseases of the Testicle, is given Continence as a sub-heading. The author strongly insists on the teaching that this is entirely compatible with health, an opinion with which most practitioners will coincide.

While speaking of spermatorrhœa, it is stated that, apart from nocturnal emissions, there is no such thing as escape of seminal fluid without the patient being aware of it. This ground is scarcely tenable.

Sexual hypochondriasis is treated by general hygienic directions and internal medication. The application of nitrate of silver to the prostatic urethra is also advised. In discussing the beneficial effect of marriage upon such patients, Jacobson voices the feeling of every right-minded man in saying: "A wife is not to be looked upon as a mere therapeutical agent."

The chapter on Impotence closely follows the teaching of Gross, to whom due credit is given. This subject and Sterility are briefly treated.

The second part of the book is devoted to Diseases of the Cord. Here, again, the classification is admirable. In discussing Varicocele, it is stated that the operation is advisable when the dilated veins prevent entrance to public service, when the disease persists, or steadily increases, in spite of treatment, and is accompanied by much annoyance, when the testicle is undergoing atrophy. The operation of choice is the antiseptic excision of the dilated veins.

Excision of the scrotum as an adjunct to operation on the cord, is not mentioned.

The third part of the book deals with affections of the scrotum. The little that is known in regard to disease of the seminal vesicles is well summarized in the few pages devoted to this subject.

The book closes with a full section on Diseases of the Penis. In treating of phimosis, attention is called to the fact that hernia frequently complicates it, and that it is a common cause of premature sexual excitement. Usually, circumcision is to be advised, excepting when the patient is the subject of hæmophilia or diabetes. Minute directions are given for the performance of the operation.

There is an extremely interesting chapter upon chronic induration of the erectile tissue of the penis. In considering priapism, it is stated that this affection may be an early symptom of leukæmia. Its association with gout is, of course, well known. There are no new suggestions in regard to treatment.

After describing amputation of the penis for epithelioma, Jacobson states that castration is in many cases to be performed in connection with this operation.

It is to be hoped that in a subsequent edition of this work, which undoubtedly will be called for, the author will append a section upon diseases of the prostate, since this is beyond cavil a genital organ. It cannot be claimed that there is much new or original advanced by Jacobson. This could scarcely be expected, since the ground has previously been so fully traversed in the famous monographs already mentioned, and in the special articles found in systems and encyclopædias, such, for instance, as those of Duplay and Reclus, Holmes's, and the German and French encyclopædias. The especial value of the present work lies in the fact that the author has enlarged the admirable structure built by his predecessors, by the addition of nearly everything of importance bearing on this subject which has appeared in modern literature; that he has arranged and formulated detailed knowledge so that it is readily accessible, and that he has been scrupulously careful to allot credit where it is due. The work is worthy of the cordial support of the profession. It is well illustrated and carefully indexed. American writers will find that their contributions have not been slighted. E. M.

ELECTRICITY IN DISEASES OF WOMEN AND OBSTETRICS. By FRANKLIN H. MARTIN, M.D., Professor of Gynecology Post-graduate Medical School of Chicago, Attending Surgeon Women's Hospital of Chicago, Gynecologist to the Charity and Post-graduate Hospitals, Member of the Chicago Gynecological Society, and of the American Gynecological Society, etc. Second edition. Chicago: W. T. Keener Company, 1893.

PERHAPS it is too much to expect that a work on electrical gynecology should be written by an accomplished physicist. It is certainly true that no real student would go to a work of the limits of that before us for his knowledge of electrical science. Consequently much of the material in the four opening chapters is out of place. It constitutes a strange admixture of the extreme elementary, the purely technical, and

the ultra-theoretical. Too little is presented for the needs of one who would master the subject, while the use of technical words and phrases with obscure definition, or none at all, would make these chapters unintelligible to the beginner. The writer is not at his best when discussing laws of magnetism and of electricity. An example of careless wording is as follows: Static electricity is said on page 17 to escape, among other ways, by "conviction" [*sic*] when "there is a great accumulation of electricity in a conductor with much strain, when a constant passage of electricity through the surrounding particles of air takes place and is swept away by the electric wind which it creates, and which is an essential part of the phenomenon." In this portion of the work the writer's indebtedness to various authors is duly acknowledged, but he may be said to have found the work of condensation difficult, and to have accomplished it at the expense of clearness.

The ten chapters which succeed are mainly devoted to the description of apparatus. The name of a well-advertised maker is rather too expansively displayed upon many of the cuts, so as to form one of their most conspicuous features. See the full-page illustration of a dynamo. To ornament the face of an otherwise very simple diagram with such a name in heavy type is absurd. See Figs. 1 and 3.

Near the middle of the book the treatment of fibroids is reached, and methods are briefly indicated. Electro-puncture is reserved for otherwise hopeless cases, "in which the Battey-Tait operation or hysterectomy do not offer an average chance of success in the hands of expert operators" (page 144). He makes it only *per vaginam*, and has seen pus develop but once out of a score of cases (page 178). Seventy-five per cent. of fibroid tumors of the uterus should not reach the knife. A short series (13) of "successful" cases is given. They were under observation for periods varying from three months to fourteen years, and were of various types, but relatively small, a few reaching the umbilicus.

In some of them, at least, where disappearance of the growth was noted, the diagnosis of fibroid might fairly be questioned when the well-known limitations of pelvic diagnosis are recalled. In case No. 2 the constipated bowels, hemorrhoids, leucorrhœa, and dysuria speak of general local congestion. The cervix was large and patulous, while the uterus "appeared at least *double its natural size*, smooth and regular in contour, with a disproportionately enlarged fundus" [italics ours]. This case he calls "one of the few actual cures," but the description suggests rather a congestive hyperplasia, with endometritis, than a fibroid, and it is not remarkable that four months of treatment with relief of the constipation should reduce so small a uterus to the normal size.

Four cases are detailed as failures.

In electricity for the resolution of inflammatory exudates the author has much confidence. His results in the treatment of vomiting of pregnancy have "always been a source of unusual gratification."

Strictures of the rectum due to inflammatory infiltration, syphilis, or cancer may be relieved in almost all cases; and, where not cancerous, may often be cured. As to carcinoma, he says that there are now on record a number of well-authenticated cases of cures by the Parsons method. By this is meant the passage of a strong interrupted galvanic current, which does not destroy normal tissue, but is said to cause cessation of the growth (page 210). The very next sentence is, "Of course, it is yet too early to say that these cases are permanently cured." He has

just used the words, "well-authenticated cases of cure." It is just this loose usage of the word cure which weakens the statements of so many writers on electrical gynecology when they talk about actual new-growths. G. E. S.

DISEASES OF THE SKIN. An Outline of the Principles and Practice of Dermatology. By MALCOLM MORRIS, Surgeon to the Skin Department of St. Mary's Hospital, London, etc. With 8 chromo-lithographs and 17 wood-cuts. 12mo., pp. 556. London: Cassell & Co., 1894.

THE title very properly suggests the contents of the book. It is truly "an outline of the principles and practice of dermatology," the subject-matter from beginning to end being handled in an easy, *currente calamo* style, which renders it the more attractive to the reader. The author is not only entirely familiar with his subject, but has a happy way of giving concisely the chief points of the many diseases discussed. We are of the opinion that the value of a book upon any special branch of medicine depends largely upon the manner in which the author brings the principles of general medicine to bear upon his topic. Without general pathology upon which to rest the whole structure, there can be no good work done on a specialty.

With such views uppermost, we therefore naturally turn to the introductory chapters on the pathology of cutaneous diseases. After giving a brief statement of the present status of inflammation, and alluding to the fact that many diseases which were formerly regarded as new growths are in reality inflammations, the subject of the bacteriology of the skin is taken up. Stress is laid upon the important rôle which the staphylococci play in suppurative processes, with special reference to folliculitis, sycosis, furuncle, carbuncle and impetigo contagiosa, and to those diseases in which a specific bacillus has been demonstrated.

In the classification of cutaneous diseases, the author states that no formal scheme is put forth, although an attempt is made to group them etiologically. We are disposed to question the advisability of adopting his method of classification for cutaneous diseases, captivating as it is for certain fixed diseases, like the animal parasites, for it leads away from symptomatology, upon which, after all, we must depend practically for the study and treatment of these diseases. Thus, while we note the grouping together of a large number of diseases dependent manifestly upon nerve disorder, other well-known diseases, which are sometimes neurotic, such as eczema and psoriasis, are allowed to stand alone, unprotected by any classification.

Among the many new things in the book, we desire to direct particular attention to the chapter on vaccinal eruptions, to which the author on former occasions, as is well known, has given special study. Two principal groups are made: 1. Eruptions due to pure vaccine inoculation. 2. Eruptions due to mixed inoculation—that is, those due to the vaccine virus together with some other virus.

Under these two headings every kind of eruption connected with vaccination may be classed, the list being a long one. This subject, we think, is handled in a very satisfactory way, and it is justly pointed out

that the accidents of group 2 are preventable by using pure vaccine lymph together with antiseptic precautions.

Concerning the contagiousness of leprosy, which is now agitating the whole world, the opinion is expressed that "it is certain that leprosy is not contagious in the sense in which syphilis is contagious, but only in a limited sense, like tubercle. The bacillus may be implanted by contact, but it can only take root when the soil is particularly favorable to its development." With this view we are entirely in accord from our own observation and studies, and we believe the doctrine to be not only conservative but sound.

Under the head of "general inoculable diseases" is found tuberculosis, the lesions of the skin now known to be of tubercular origin, according to Mr. Morris, including (1) Those conditions formerly called scrofulous, and still, for convenience, grouped under the common term of scrofuloderma; (2) the tubercular ulcers, strictly so called, occurring in regions exposed to direct infection in persons suffering from pulmonary or intestinal tuberculosis; (3) verruca necrogenica, or post-mortem wart; and (4) lupus vulgaris. The rarer diseases, which at the present day are under discussion, are duly considered. Of these, adenoma sebaceum, keratosis follicularis, acanthosis nigricans, molluscum epitheliale, cutaneous psorospermosis, angiokeratoma, lymphangioma circumscriptum, xeroderma pigmentosum, pityriasis rubra pilaris may be mentioned.

Throughout the pages occur woodcuts, for the most part well executed, illustrating the clinical features of certain rare diseases, while eight original chromo-lithographic plates, with two pictures on each plate, grace the volume. They are admirably drawn and artistic, though some of them, we think, are too intensely colored, a fault common with most English portraits. They add distinctly to the value of the book, the several eczemas of the ear being perhaps the best of the series.

It may be said that the work is worthy of the author, who has labored so faithfully in England to advance this branch of medicine. It is a reliable and impartial exposition of the subject, written from a strictly practical standpoint, and we commend it heartily to the profession. The volume is small and compact, but contains a great deal in a condensed form. L. A. D.

THE HEALTH OFFICER'S POCKET-BOOK. By EDWARD F. WILLOUGHBY, M.D. Pp. 376. London: Crosby Lockwood & Son, 1893.

THIS is a very handy work, particularly adapted to the needs of medical officers of health. The sections on mathematical practice and meteorological practice are very useful; that on demography and statistics contains many valuable facts and suggestions which may with great benefit be utilized by public health statisticians. Other sections deal with engineering memoranda, duties of medical officers of health, inspection of meat, sanitary arrangement of houses, potable water, dietetics, and scavenging. Although written with particular reference to English conditions, there is much of interest to American readers. Part II. deals exclusively with English sanitary law. C. H.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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The Treatment of Neurasthenia.

Dr. Monteuvis apparently believes that "all neurasthenics without exception are arthritics (Vigouroux)." The medical treatment consists in the administration of the alkalies, the use of electricity, particularly of Franklinization, two means which favor oxidation and combat the weakening of nutrition. The dietetic treatment, so far from being a super-alimentation, is really a diminution of the nourishment, and this is essential. Further, it is important to use laxatives which increase the gastro-intestinal and biliary secretions and assure to a certain extent general antisepsis, thus preventing auto-intoxication. In addition the habitual constipation of the neurasthenics is thus relieved.—*Journal des Practiciens*, 1894, No. 9, p. 103.

Metallic Electrolysis.

Dr. Margaret A. Cleaves defines the term metallic electrolysis as a "method which makes use of the chemic action of the positive pole both upon foreign substances—that is, metals such as copper, zinc, and iron, and the tissues at the same time." Ordinarily, in galvano-caustics, chemicals are manufactured by electrolysis out of the tissues themselves—at the positive pole, acids; at the negative, alkalies—which are in turn directed against diseased states. In metallic electrolysis, however, there are found certain new salts which are utilized in the treatment of disease. Gautier showed by his laboratory experiments that there was an actual decrease of weight in copper electrodes after use. Further, it was found that when muscular tissues or mucous membrane were submitted to the action of a copper anode, an oxychloride of copper was formed. In order to ascertain the action of this copper salt upon the uterus of a rabbit, forty intra-uterine applications were made of ten

minutes' length, with five minutes for reversal of the poles, at three days' intervals. It was demonstrated that there was—1, an appreciable deposit of copper salt on the entire surface of the mucous membrane; 2, a complete penetration of these salts into the tissues; 3, there was found one salt, oxychloride of copper, which is insoluble, and another, an organo-metallic salt which was soluble. In comparing the microbicidal action of the oxychloride of copper with the positive pole of the constant current with an unoxidizable electrode, it was found that the copper salt is much more effective than the galvano-caustic method. Further experimentation showed that in metallic electrolysis the properties of the current which are constantly active are the electrolytic and the cataphoric. So far as conductivity is concerned, the human body may be regarded as a two per cent. solution of sodium chloride. By electrolysis of the tissues in contact with the positive pole, there are set free oxygen, acids, and chlorine. These in turn attack the soluble metallic electrode, whether sound or needles, and there results an oxychloride of copper, zinc, or iron, as the case may be. The cataphoric property of the current—which after the formation of the salt electrolytically, causes it to penetrate the tissues rapidly in a zone around the sound or needle to a greater or less extent—is equally important. This method is not a caustic one, as in ordinary galvano-caustic applications, simply because the organic acid which is set free attacks the oxidizable electrode instead of the tissues. The newly formed salts of the metals of which the electrode may be made are diffused into the tissues, producing an elimination and a repair which takes place without pain and without inflammatory reaction. This method is characterized by low intensities and long sittings, as opposed to the high intensities and short sittings of the galvano-caustic methods. The advantages of metallic electrolysis over topical applications of sulphate of copper in stick or in solution, of zinc in paste or solution, or of iron in solution, are—1, the ability to localize the medicinal action of the metallic salt which is used directly upon the diseased surface, as, for instance, at the bottom of a deep sinus; 2, the drugs are introduced into the system in a nascent state, and thus are more active; 3, by cataphoresis the salts thus formed are driven into the tissues, rather than laid upon the surface as in ordinary topical applications; 4, there is obtained at the same time the beneficial action of the physiological properties of the currents. The technique of the treatment is that of any galvano-caustic application save that the positive pole is always the active one, and for the usual electrodes there are substituted needles and sounds of copper, zinc, and iron. After each application the electrodes should be carefully rubbed with emery paper in order to secure an unoxidized surface for the next application. In gynecological work a current-strength of from twenty-five to forty or fifty milliampères should be used. The sittings are at the outset of fifteen, and frequently increased to thirty minutes or more. For combating hemorrhage, prolonged sittings of metallic electrolysis are more successful than strong currents of short duration. In intra-uterine treatment, applications should only be made three or four times a month, as the results are compromised and retarded by too frequent sittings. The work done by this method (copper) is one of congestion, elimination, and repair, which requires eight days to complete. This method has been used (zinc) in chronic inflammatory conditions of the uterine mucous membrane accom-

panied by induration and sclerosis; also in fibroid and keloid growths. It has also been employed in hypertrophic rhinitis, ozæna, chronic coryza, nasal polyp, sebaceous cysts, chronic urethritis, hemorrhoids and fissure, epithelioma, chancroid, and chronic conjunctivitis. Trachoma and vascular tissue also have been treated, the former by copper, the latter by iron, care being taken in this case to reverse the current, so that tearing of the tissues may be avoided. Eleven cases are reported: hypertrophic rhinitis, trachoma, urethritis, endometritis, uterine fibroids, granular and cystic degeneration of the cervix uteri, where the success has been gratifying.—*Journal of the American Medical Association*, 1894, vol. xxii. pp. 94, 129, and 116.

Neurasthenia in Young Women.

Drs. Henry B. Deale and S. S. Adams believe that the treatment to be successful must be directed to the improvement of the general health, with sufficient attention to any prominent local manifestation which may arise. Bathing, exercise in the open air, a designated amount of rest of mind and body, abstention from undue mental excitement, must be prescribed. The digestion must be carefully watched, the diet rigorously laid down, the insomnia combated by retiring at a regular hour and avoidance of exciting conversation and reading just prior thereto. Travelling in distant countries, riding, sometimes upon horseback, a change of climate, may all prove beneficial. The dress should be comfortable, suited to the season, and hung from the shoulders in order that pressure upon the thoracic and abdominal viscera may be avoided. It may be occasionally necessary to administer an anodyne or a cardiac stimulant, but great care must be taken that the patient is not made a hopeless inebriate. Electricity, hydrotherapy, and massage applied by the physician may be of benefit. Small blisters or the mild cautery along the spinal region sometimes yield beneficial results. Complete control over the patient must be assumed, and the rules for her daily life must be written out clearly and succinctly, and their enforcement insisted upon.—*The American Journal of Obstetrics*, 1894, No. 194, p. 190.

The Treatment of Tabes Dorsalis.

Dr. Max Weiss reports a single case in which the specific treatment consisted in the use of iodide of soda in from seventy-five to one hundred and twenty grains daily. In this instance the patient had suffered from syphilis, for which he had received injections of corrosive sublimate. Within four months the marked symptoms had almost entirely disappeared. The urethral crises and weakness of the detrusor were cured by galvanization through the lumbar spinal column to the perineum and hypogastric region, together with the internal use of ergot and strychnine. In this case there were no symptoms of iodism, which in many cases is due to the impurity of the alkaline iodide—the presence of iodic acid. If for any reason the administration of the iodide cannot be *per orem*, the rectum furnishes an excellent substitute, since experiments prove that the absorption from the rectal mucous membrane is quite as rapid as from the gastric. To prevent iodism, which results from the setting free the iodine from the iodides, Ehrlich recommends the harmless sulphanilic acid in doses of sixty to ninety grains, with the addition

of forty-five to sixty grains of carbonate of soda dissolved in water, every two or three days.—*Centralblatt für die gesammte Therapie*, 1894, Heft 2, S. 65.

Atropine in Morphinismus.

Dr. Albrecht Erlenmeyer calls attention to the plausible hypothesis of Marmé, that morphine in the body through the taking up of oxygen is changed into oxydimorphine, and it is this substance which gives rise to the symptoms of abstinence—that is to say, that the abstinence-symptoms are the result of oxydimorphine poisoning and not of morphine. Since then these symptoms are not caused by morphine, the use of atropine for their relief is not rational, and should be abandoned.—*Therapeutische Monatshefte*, 1894, Heft 1, S. 14.

Chloralose Poisoning.

Dr. P. Watson Williams reports a single case in which recovery took place. The patient, a highly neurotic lady of forty-two years of age, received ten grains at night suspended in milk. The next evening she again received the same dose. Within ten hours she became very excited and restless, commenced to call out. Two hours afterward she was in a state of acute delirious mania, burying her head in the pillow in abject terror, and did not recognize anyone. The pulse was unusually good, the pupils were unaffected. She forcibly resisted any attempt at restraint, and seemed acutely sensitive to the prick of a needle when a quarter of a grain of morphine was given hypodermatically, the one-sixth of a grain was given a half-hour later, which, however, did not produce any quieting effect. Six hours after the injection of the drug she apparently recovered completely, but was wholly unconscious of all that had taken place. Chloralose is said to act as a sedative to the cortex of the cerebrum, while it stimulates the medulla and spinal cord. In this case it appeared to stimulate the heart's action. In Lang's case, previously reported, there were, with similar dose, no mental symptoms beyond loss of consciousness. Ten grains is considered to be the minimum initial dose, while twenty or thirty grains is not a very large dose. Thus the bad results produced in each of the cases alluded to above, by ten grains only, will serve as a caution in its administration in cases where chloral should be considered as distinctly contra indicated.—*The Practitioner*, 1894, No. 308, p. 98.

Strychnine as a Cardiac and Respiratory Stimulant.

Dr. W. H. Washburn reports the case of a patient who had swallowed two ounces of chloroform with suicidal intent. The dilated pupils did not react to light; the respirations were exceedingly shallow, irregular, and scarcely perceptible; and he had the weak, uncertain, and irregular pulse of a dying man. One-twentieth of a grain of strychnine was injected subcutaneously and artificial respiration practised; one hour afterward one-sixtieth of a grain was injected. Complete recovery followed. It is believed that in strychnine administered hypodermatically we have a valuable remedy for the alarming symptoms which arise during surgical anæsthesia. In one instance

where recovery from chloroform anæsthesia was marked by a blanched appearance of the patient, and almost imperceptible pulse, rapid improvement followed the subcutaneous injection of one-twentieth of a grain of strychnine. —*The Therapeutic Gazette*, 1894, No. 2, p. 75.

The Treatment of Grippe.

Dr. Gingeot closes a very interesting paper with the following conclusions: It is necessary to seek, 1, to sustain the general strength; 2, to preserve in particular the strength of the heart; 3, to combat the local lesions produced by the infection. The stimulants, tonics, notably the *potion alcoolique* (Todd's potion), the wine of Bagnols, fulfil the first indications; caffeine and ether subcutaneously the second, and local revulsives the third. Nitroglycerin diminishes arterial tension and relieves the work of the heart muscle; the iodide of soda acts in the same way and exercises a resolving influence upon the organic alterations. The use of milk is also advisable.—*Journal des Practiciens*, 1894, No. 8, p. 85.

The Treatment of Diphtheria.

Dr. Pauliet claims the best results from treating the false membranes by applications of a saturated solution of papaïn. One-half hour afterward make an application of a liquid which is composed of equal parts of Van Swieten's liquor and glycerin. Alternate these applications every half-hour until the disappearance of the membranes.—*Bulletin Général de Thérapeutique*, 1894, 4e livr., p. 88.

Papaïn in Ulcer of the Stomach.

Dr. J. F. Barbour reports a case in which, without warning, a teacupful of bright arterial blood was vomited; the stools were tarry for several days. One hour after eating there was experienced a violent pain in the stomach, which lasted for two or three hours. In addition, there was noted heartburn, flatulency, and constipation. A rigid diet, Carlsbad salt, subnitrate of bismuth, with morphine, nitrate of silver, gave some relief. Seeing that papaïn has been used to stimulate repair in indolent ulcers, it was hoped that it would also relieve the dyspeptic symptoms. It was found that an unanticipated effect was secured—the relief of pain. After three weeks the remedy was omitted and there was no return of the pain. Since this condition of ulceration may persist for two or three years, and the patient be constantly threatened with perforation, it seems that a remedy which will relieve the pain and the dyspeptic symptoms, and at the same time promote the healing of the ulcer, is a great desideratum.—*Notes on New Remedies*, 1894, No. 8, p. 113.

The Treatment of Atony of the Stomach.

Dr. Savigny believes that this condition is an enfeeblement of the muscular wall of the stomach, and should be distinguished from dilatation of that organ in that its capacity is not increased. Since there is no retention of food, lavage is useless. The nourishment should be substantial and yet of

small volume, and the ingestion of large quantities of fluid should be avoided. The nature of the digestive disturbance and the character of the gastric secretions must be taken into account when the choice of food is made. In all cases a milk diet should be avoided. Food slightly laxative should be resorted to, and for persistent constipation enemata of oil, or of glycerin and water, or such purgatives as cascara or rhubarb should be prescribed. For increasing the tonicity of the muscular coat nux vomica or strychnine may be resorted to; some authors even recommend ergot, the use of which should be from time to time interrupted. For the same purpose electrization, massage, and hydrotherapy may be counted among the best means at hand.—*Revue de Thérapeutique Médico-chirurgicale*, 1894, No. 2, p. 37.

The Treatment of Scurvy in Children.

Dr. G. A. Sutherland considers that the preventive treatment of scurvy consists in the employment of a proper diet, and that the breast milk in the case of infants is the best and safest food. A teaspoonful of the juice of oranges, lemons, or grapes twice a day with the food is recommended. All varieties of preserved milk, along with the different proprietary infant foods, are to be absolutely forbidden. In older children a more liberal diet is allowed, attention being paid to the condition of the digestive system, but no salted or preserved foods of any kind are to be given. The more special part of the treatment in all cases consists in the free administration of fruits and vegetables, as oranges, lemons, grapes, potatoes, and cabbage. The juice of the fruit may be expressed and added to the milk in the case of infants. Potatoes and other vegetables may be conveniently administered in soup made from meat stock. In the convalescent stage cod-liver oil is of great service in restoring the general health. The local treatment is unimportant because, under proper diet, all manifestations clear up rapidly. If the gums are ulcerated and bleeding they may be painted with a solution of glycerin of tannic acid. When the limbs are swollen and tender, support and rest by means of sand-bags and the application of cold compresses will give relief. The general hygienic treatment must be attended to; sunlight and fresh air are of great value. Since fatal cardiac syncope sometimes occurs, rest in bed ought to be maintained until the patient is free from pain and breathlessness, and has been under antiscorbutic diet for some time.—*Practitioner*, 1894, No. 308, p. 81.

[In a case of scurvy in an infant seen in consultation, we advised removal to the country, fresh cow's milk properly modified, the use of the juice of oranges, and an acid preparation of iron. Complete recovery was secured within three weeks.—R. W. W.]

Salophen.

Dr. H. Köster has found in about thirty cases of acute articular rheumatism the pains rapidly diminished, generally within four days completely disappearing after the ingestion of fifteen-grain doses. The effusion diminishes and the temperature falls, and this occurs without the appearance of unpleasant symptoms. In spite of its use in two cases other joints were invaded, and in four there was noticed an onset of pain after it had already

disappeared. In acute muscular rheumatism in a few cases favorable results were obtained. In chronic articular rheumatism the pains were lessened in some cases, but in the few cases under observation the results were generally negative. As an antipyretic it was useful, but it could not be depended upon for producing a marked depression of temperature. Better results were obtained in neuralgic and similar affections—headaches, hemicrania. In six cases of exudative pleuritis it seemed to have no marked effect upon absorption of the effusion. He concludes that, although it is a powerful remedy in acute rheumatic diseases and a useful one for neuralgias, it is not of importance as an antipyretic.—*Therapeutische Monatshefte*, 1894, Heft 1, S. 17.

The Treatment of Acute Articular Rheumatism.

Dr. Dujardin-Beaumetz recognizes the fact that we have in the salicylate of soda a specific treatment for this condition, which it is necessary to distinguish from pseudo-rheumatismal manifestations and from chronic rheumatism. The former may be considered the joint manifestations of pathogenic microbes of various origins, gonococci of blennorrhœas, microbes of scarlet fever, staphylococci of purulent infection. The latter should be classed among the disorders of nutrition. Acute articular rheumatism is an infectious disease; its cyclical progress, the temperature curve, always the same. Were it contagious there would be not a doubt as to its infectious nature. Although the salicylic acid has been abandoned, for it is ordinarily not well borne by the stomach, and salicine has been rejected, yet medical opinion is in harmony in regard to salicylate of soda, not only as to dose, but that it should be administered in solution and in divided doses, according to the intensity of the disease and its resistance to the remedy. The minimum dose is one drachm; in acute cases we can exhibit twice this quantity, or even to two and one-half drachms in the twenty-four hours. Given at intervals of from two to four hours in aqueous solution, the nauseous taste can be avoided by the addition of sweetened water, or a small quantity of brandy, kirsch, or rum. For dyspeptics who do not tolerate its administration *per orem*, the rectum offers a perfect substitute, for Lemanski has shown that when given in rectal injection, it will appear in the urine in fifteen minutes. It is well to produce diuresis, and in this way to hasten its elimination. A milk diet is advisable, and when the dose exceeds two drachms it is necessary, although Paul and Labbé prefer the alkaline mineral waters of Vichy, Ponges, or Vals. When the symptoms disappear the remedy should be continued for two or three weeks in small doses, to avoid the danger of relapse. This remedy does not jugulate the disease; it masks its evolution, so that it reappears if the drug be omitted. If the treatment is commenced at the onset it prevents complications, so that we see less frequently than formerly the heart manifestations. Although it does not cure all cases, it cures the great majority, and the exception proves the rule. Certain individuals present an almost complete intolerance, either showing toxic symptoms, intestinal troubles, or cerebral symptoms, even to delirium; these symptoms may be produced by small doses even. The reason of this intolerance is well known, it is insufficient elimination, which is readily determined by treating the urine with perchloride of iron, which gives rise to a violet color if only minute traces of

salicyluric acid are present. In children and adolescents to the age of twenty, in whom renal activity is great, the drug is well borne; in old age, or in subjects who have diseased kidneys, the elimination may only take place after twenty-four or forty-eight hours, and then persist for three or four days. Where the remedy has produced an abortion, the authors do not seem to have taken into consideration the fact that renal congestion is the rule in pregnant women. Therefore caution should be exercised in using the drug during pregnancy. The inconveniences of antipyrine and of exalgine are avoided in asaprol, which is a calcium monosulphonate of β-naphthol. This remedy is a soluble antiseptic, non-poisonous, which is eliminated as a sulphuric ether of naphthol, and as such is recognized by the dark-blue color which perchloride of iron gives when added to the urine in which it is present. The dose is from forty-five to one hundred and fifty grains per diem. It does not produce either dyspeptic or nervous troubles; it lowers temperature and pulse-rate. The method of administration is by means of cachets, or in aqueous solution, to which sweetened water, or anisette, or curaçoa is added at the time of taking. It appears to be the equal, if not the superior, of salicylate of soda in the rapidity in which it gives relief and cures the patient. There have been noticed no untoward results even in patients who suffer from albuminuria. The external treatment of rheumatism holds only a secondary position: wrapping the joints in cotton, the use of soothing liniments, of doubtful value. However, Bourget has strongly recommended the external application of salicylic acid according to this formula: Salicylic acid, lanolin, essence of turpentine, of each, 5; lard, 40. He declares that within half an hour after frictions have been made with this preparation the urine shows the presence of the drug. However, Ruel, for the past six years, has used salicylic acid, 2; absolute alcohol, 10; castor oil, 20, with the addition of chloroform, to facilitate the absorption of this remedy.—*Bulletin général de Thérapeutique*, 1894, livr. 2, p. 1.

M. Huchard reports a single case of a chronic rheumatic who had become habituated to the use of salicylate of soda, and used an old solution which had become somewhat evaporated. Each teaspoonful originally contained thirty grains of the drug, but the dose in this case was difficult to determine. Two hours afterward she complained of pain, extreme mental anxiety, violent tinnitus, and intense dyspnœa. The patient was not hysterical, nor did the urine contain albumin, although there was slight functional renal insufficiency. This patient possesses also a certain susceptibility toward other drugs.—*Revue de Thérapeutique Medico-chirurgicale*, 1894, No. 2, p. 43.

Piperazine.

Dr. D. D. Stewart presents an interesting paper on the influence of this drug on the urine, and especially on uric acid and urea excretion. In three cases which he reported one year ago the uric acid excretion was abnormally high and the daily fluctuations were often extensive. It was not apparent, however, that excretion of either uric acid or of urea, or even the degree of acidity of the urine, were markedly influenced by the drug in the doses administered, the average of which was a half drachm, double that previously used by most observers. The bulk of the evidence, however, at the time of

the appearance of the former paper was convincing, to the effect that this drug, although it had, *in vitro*, a markedly disintegrating effect on uric acid, with which it forms the most soluble known salt of the latter, does not actually, in the doses ordinarily administered, increase uratic excretion, however much benefit it seems to exert on cases the nature of which is dependent upon impairment of such excretion. One observation upon a patient suffering from chronic Bright's disease showed that there was actually a slight diminution, not only in the amount of urine, but in the more important urinary constituents, notably uric acid and urea. The difference is, however, too slight to be explained by any influence exerted by the drug upon the kidney. An observation made upon a patient suffering from chronic arthritis of gouty origin, and due to the deposit of urates in the joints through imperfect excretion on account of inadequate kidneys, in which very large doses were used (to seventy grains per diem), showed conclusively that the drug is practically without effect upon uric acid excretion, at least uric acid as uric acid. Apparently this drug does exert a salutary effect upon the uric acid condition; the only mode of action possible is such as has been attributed to certain of the alkalies—as vegetable acid salts of potash. The increased alkalinity of the blood these latter produce is supposed to promote its oxidation function, increasing the formation of urea, and perhaps also transforming a modicum of the uric acid by oxidation into the former, or into a second more oxidized product than uric acid, such as bodies of the alloxan or allantoin series. Though no data are at hand showing that such a transformation of uric acid into urea does take place in the organism, the fact that uric acid is so closely related to the latter tends to indicate that such a metamorphosis may occur in the human organism under favorable conditions. An investigation of the action of the drug from this standpoint may throw light upon its action, otherwise so obscure. The urea formed from a portion of the uric acid would, of course, be in such small quantity as to be practically unrecognized by quantitative tests because of the normal daily variation. The detection of the presence of allantoin or alloxan in any quantity in the urine under the use of this drug could be more easily interpreted. Untoward effects have been noticed when large doses have been given; feelings of nervousness and apprehension, intermittent clonic spasms of the upper extremities, spreading to the muscles of the abdomen and legs, the patient became dazed, unable to think clearly, for some hours partly unconscious, muscular prostration with incoördination, coarse tremors, uncertainty of gait for several days, due rather to impairment of coördination than to any paretic condition of the muscles. Since untoward symptoms were caused by drugs from different manufacturers, it is evident that the toxic principle exists in the drug, though not to the same extent in equal amounts. Wittnack believes that the hygroscopic property of the remedy must be borne in mind, less disappointment attend its use, and states that some samples may contain as much as 50 per cent. of water. For this reason he recommends salts of piperazine rather than the base, as the more stable.—*Therapeutic Gazette*, 1894, No. 2, p. 86.

Dr. Blanc has carefully reviewed the literature of this remedy, which it was hoped would cure gouty affections more surely than colchicin and more rapidly than lithia. The latter can be used only in small doses, because it

rapidly exhausts the kidneys and disturbs digestion, therefore it is a slow treatment, and it is not exempt from inconveniences. Theoretically the use of piperazine is very encouraging. An alkaloid of the pyridine group, it is not poisonous nor irritant; it is very soluble in water, even deliquescent. The combination of urate of soda and this drug is nearly nine times more soluble than the urate of lithia. In daily doses of from fifteen to forty-five grains it is without marked effects, unless it have a diuretic one. Vogt has found that under fifteen-grain daily doses the amount of urates is decreased, while that of urea increases. This goes to show that not only does this drug dissolve urates, but it is an oxidizing agent and modifies tissue change. On the other hand, the nitrogen which is eliminated is not increased, which shows that there is no increase of waste nor supplementary decomposition of albuminoids. The piperazine is excreted, undecomposed, by the kidneys. If used hypodermatically it causes acute pain and an infiltration more or less marked, and sometimes an abscess. It has been strongly recommended for gout, in that it relieves the pain, frees the engorged joints, and expels renal calculi. Patients who have suffered from nephritic colic, some days after the use of the drug experience a recrudescence of the pain, which is followed by the expulsion of a large calculus, which has apparently been diminished in size by the action of the drug. In this respect it appears to act with less danger than do the alkalies, and more rapidly than the flushing out of the kidneys with Vittel or Contréxeville waters. On the other hand, relief is sometimes slow in appearing, and colchicin when properly used is far more rapid; and further, piperazine is sometimes without effect. It is believed that the drug should be used, especially when others have failed, in from fifteen to thirty grains *per diem*, dissolved in a carbonated water, taken in two doses, fasting if possible.—*Revue de Thérapeutique Médico-chirurgicale*, 1894, No. 3, p. 74.

The Cresols: Tricresol.

Dr. Oscar Liebreich presents this drug as an agent for disinfection for surgical and hygienic purposes. Taking the formula of carbolic acid as phenol, that is, a benzol in which a hydrogen atom is replaced by a hydroxyl group (HO), it is possible to have three isomeric bodies in which the hydrogen atom, which is replaced by the methyl group (CH_3), is more or less farther removed. These isomers may be designated ortho-, meta-, and para-cresol. A mixture of these three chemically pure bodies has been named tricresol. The value of carbolic acid as a disinfectant depends upon its percentage of the contained cresols. Recognizing the fact that creolin, solveol, and lysol owe their value as disinfecting properties to the cresols which they contain in varying proportions, it is also evident that they have limitations in the amount of cresols which they may contain, and as well there may be dangerous symptoms produced by their impurities. The pure cresols are soluble at ordinary temperature in water from 2 to 2½ per cent, and are used in from ½ to 2 per cent. solutions for medicinal purposes. These new products are undoubtedly a great advance, and it is quite likely that from tricresol a series of preparations may be made which will be of great value.—*Therapeutische Monatshefte*, 1894, Heft 1, S. 25.

MEDICINE.

UNDER THE CHARGE OF

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THE DIAGNOSTIC VALUE OF THE DIAZO REACTION (EHRLICH).

As a result of the systematic examination of 227 cases, of various nature, admitted into the Cork-Street Hospital, Dublin, DR. W. R. DAWSON arrives at the following conclusions as to the value of Ehrlich's test:

"1. That the diazo reaction is found in the great majority of cases of enteric fever at some period between the fifth and twenty-first days, and is more constant in that disease than in any other (of those tested) except measles, and, perhaps, acute phthisis, so that, with these reservations, its presence affords a presumption in favor of, its absence a much stronger presumption against, such a diagnosis.

"2. That the reaction cannot be used either positively or negatively to distinguish enteric fever from phthisis or measles, and that the presumption which it affords against typhus is small.

"3. That it is nearly or quite constant in measles, but absent in at least many cases of rötheln, and may, consequently, be used to distinguish between them.

"4. That the substance causing it does not indicate its presence by any peculiarity in the color, odor, deposit, reaction, or specific gravity of the urine, nor by the presence of albumin, sugar, or indican, although their concurrence is not uncommon.

"That it is not due to free acetone, nor to a direct product of the bacillus typhosus of Eberth."—*Dublin Medical Journal*, No. 258.

ALBUMINURIC ULCERATION OF THE BOWELS.

BEFORE the Medical and Chirurgical Society of London DR. W. H. DICKINSON has lately summarized his experience of twenty-two examples of this condition. The subject was referred to in his Croonian Lectures in 1876. In all the cases ulceration of the bowel was coincident with, and presumably pathologically connected with, renal disease. Eight instances are appended as of collateral interest, in which, under similar circumstances of renal disease, the bowel was the seat of hemorrhagic extravasation without ulceration.

The ulcers were not confined to any one part of the bowel, though most frequent in the lower part of the ileum, nor were they especially associated with any of the glandular structures. The most marked character of the

ulcers was their association with hemorrhage; recent extravasation, and pigmentation the result of extravasation, were frequently to be seen in their neighborhood, and in three cases where the specimens were subjected to microscopic investigation blood in various states of alteration was found in the submucous tissue in connection with the lesion. Two cases are adduced in which the stomach was ulcerated as well as the bowel, in one the ulceration being associated, as in the bowel, with extravasation of blood.

In the twenty-two cases of intestinal ulceration upon which the paper is based, the kidneys were diseased in all; in fourteen they were granular, in two large white. In nineteen of the cases hypertrophy of the heart was noted; in nine there was retinal hemorrhage or exudation. Thus the albuminuric ulcer presents itself in company with other members of the cardio-vascular series to which it apparently belongs.

The lesion mostly presents itself late in the course of the renal disease, and often brings about the fatal issue by means of peritonitis and perforation. The symptoms commonly present are griping, abdominal tenderness, diarrhœa, and vomiting. In a minority of cases no symptoms are to be observed.

Dr. Hale White observed that in a series of twelve cases of ulcerative colitis four of the patients had granular contracted kidneys. He agreed that peritonitis was more common than perforation.

The disease under discussion was evidently one form of the disease described as ulcerative colitis. He differed from the author in believing that ulceration was caused by inflammation in these cases, rather than by hemorrhage, which latter might be evidence of the severity of the ulceration.

Tricuspid Stenosis.

Dr. E. H. Colbeck discusses in the *Medical Chronicle* (vol. xviii., No. 5) the above affection at some length, and appends full notes of seven cases in which it occurred, and in five of which it was diagnosticated during life. The symptoms were fairly constant; dropsy in varying degree in every case, and generally extreme cyanosis of the face and extremities; general venous distention; dyspnœa in every case; palpitation, associated with infra-mammary or epigastric pain.

After referring to the rare event of dropsy in uncomplicated mitral stenosis, the writer observes that the occurrence of dropsy when tricuspid stenosis is superadded may be explained by the partial relief of the pulmonary engorgement at the expense of an increased distention of the systemic veins.

Right-sided dilatation and hypertrophy (mainly auricular) is nearly always present; the dulness is best appreciated in the third, fourth, and fifth right interspaces.

The auscultatory signs are often most conclusive. In five out of seven cases a presystolic or diastolic murmur was heard more or less clearly over the tricuspid area, by which is understood the fourth and fifth left intercostal spaces close to the sternum and the area around the ensiform cartilage.

The murmur was very inconstant in all the cases, and is, therefore, likely to be overlooked unless repeated auscultation be practised. A tricuspid regurgitant murmur is also usually present, but usually follows the right heart first sound, which is short, sharp, and loud. The jugular veins are usually

full, and there may be some pulsation. This, however, is usually absent and the veins do not fill from below up. The liver is often greatly enlarged but does not pulsate.

The important diagnostic points are summarized as follows:

"1. Dropsy, well marked in all cases, and usually extreme. 2. Extension of the area of cardiac dulness to the right of the sternum, associated with epigastric pulsation and a forcible right heart impulse. 3. A presystolic or diastolic murmur audible over the tricuspid area. 4. A short, sharp, and loud right-heart first sound, not obscured by the systolic murmur if it be present. 5. Fulness of the jugular veins not accompanied, as a rule, by pulsation. General venous distention, associated with cyanosis or lividity of the face and extremities."

The article concludes with the consideration of the pathology and prognosis of the affection. He adopts the view that the tricuspid stenosis is secondary to and caused by the stenosis of the mitral valve. Its occurrence greatly increases the gravity of the prognosis.

The Gases of the Stomach.

A review of the more recent investigations into the composition of the gases of the stomach leads Dr. McNaught, of Newchurch, to the following conclusions:

"1. That the formation of H and sometimes marsh-gas in the stomach is much commoner than was formerly supposed. 2. That its production is the result of retention of the food, usually in a dilated stomach, but stenosis of the pylorus without dilatation may cause it. 3. Stenosis of the pylorus is the commonest cause, but stenosis of the duodenum has been found in three cases. 4. That H preponderates in cases of non-malignant stenosis, in which there is an excess of HCl secreted. 5. That in stenosis of carcinoma the gas consists chiefly of CO_2. 6. That SH_2 may also be produced in a stomach whose secretion contains a normal quantity of HCl, if retention of the food from any cause exists. 7. That certain cases of flatulency are undoubtedly due to swallowed air. 8. That the most efficient antiseptic agent is salicylic acid or salicylate of sodium."—*Medical Chronicle*, vol. xix., No. 2.

Calcium Chloride as a Hæmostatic.

Dr. Saundby (Birmingham) records cases of rectal hemorrhage and purpura hæmorrhagica in which five six-grain doses of chloride of lime arrested hemorrhage after other measures had failed.—*Birmingham Medical Review*, No. 182.

Lesion of Cauda Equina; Relief of Symptoms by Operation.

Dr. J. E. Shaw and Mr. Paul Bush, of Bristol, record the following case: Patient aged thirty years, bootmaker, was admitted to hospital complaining of weakness, pain, and loss of sensation in legs and loss of control over anal and vesical sphincters. He dates his illness from a strain of the lower part of the back during a struggle eleven years ago, but for two or three years

before that had experienced slight dull pains in popliteal spaces and outer sides of thighs and legs.

The accident was shortly followed by gnawing pains in back of thighs, accompanied later by pain and tenderness over lower end of spine. Progressive weakness of the legs began within two months. For two years has been unable to walk without a stick. Anæsthesia began about same time, and he believes spread downward from the back of the thighs. Within three months of accident there was loss of control over rectum. Last four years has used an enema every second day. Frequent micturition with pain, eventuating in incontinence, began within eight months of onset. Catheterism practised for four years.

Of late years has had painful spasms of hamstring muscles. There have been nocturnal emissions, with sensation, about once a month since onset; of late, occasionally by day. For two years has had an ulcerated corn on ball of great toe.

State on admission. Unhealthy looking; usually lies on right side with legs drawn up. The fourth or fifth lumbar spine is somewhat prominent, and at that point, and for a short distance below, there is tenderness on percussion and on the application of a hot test-tube or sponge. *Reflexes:* Right knee-jerk, normal; left, slightly exaggerated. Neither patellar nor ankle clonus obtainable. Plantar reflex absent on both sides; the cremasteric present, and the abdominal and epigastric exaggerated.

Legs are weak; scarcely lifts them from ground in walking; left weaker than right. Diminished excitability and reaction of degeneration in hamstring, peroneal, calf, and tibial muscles. Occasional fibrillary tremors in affected muscles. Total anæsthesia of skin over coccyx and around anus; to a less degree over nates, back, and inner sides of thighs, popliteal spaces, calves, lower parts of the fronts of the legs; to a slight degree on the outer side of the left leg, and the entire feet except upon the inner side of each foot. Different forms of sensibility about equally affected. Urethra completely anæsthetic, but testes sensitive. Rectal mucous membrane also anæsthetic.

Suffers from intense darting pains in back of thighs and legs, requiring morphine hypodermatics every three hours.

Laminectomy was performed by Mr. Paul Bush about a month after admission. After dissecting off muscles and fasciæ on each side of the spinous processes a swelling was exposed situated in the middle line; this was freely incised, when a rounded cavity, covered in with a thin shell of bone some three inches across, came into view. The spine of the fourth lumbar vertebra was found to be pushed backward; this was removed, together with the laminæ on either side, by means of the bone-forceps. The fifth lumbar spine and laminæ appeared to have been entirely absorbed; the cavity, which was evidently the dilated spinal canal, contained a solid mass, which was removed, some hemorrhage occurring. The nerves forming the cauda equina at this position could not be clearly defined, as they were pressed forward against the posterior surface of the bodies of the vertebræ, and covered over by strong fibrous tissue. In removing this mass it was torn into several pieces, one of these fragments being as large as an ordinary orange.

Four days after operation one hypodermatic daily sufficed to keep pain

under. Two months after there was an appreciable recovery of sensibility all over the affected areas, and pain continued to diminish. On examination the mass removed from the spinal canal showed well-organized blood-clot, with some fibrous tissue, but no other distinctive structure.—*Bristol Med.-Chir. Journal*, vol. xi., No. 41.

Hemianæsthesia and Ataxy from Lesion of Pons Varolii.

Dr. H. H. Brown (Ipswich) reports as follows: A woman, aged twenty-four years, suddenly felt faint and fell without loss of consciousness. There was no history of cardiac or renal disease. Next day there was complete paralysis of right side of face to all stimuli. Pupils contracted. Eyes could not be moved to right beyond the middle line. Sensation was wanting over left side of body and face. Left plantar reflex absent. Some difficulty in swallowing and articulation. No motor paralysis of limbs. Knee-jerks both normal. Temperature 100° F.; pulse 90, regular. Respiration normal. Left conjunctival reflex present, not the right. Next day sensation returned to some extent over face, but still almost entirely absent over left side of body. Internal strabismus of right eye.

Condition grew worse during next few days. Temperature and pulse rose. Patient was drowsy and complained of pain in head, left arm, and breast. Speech became quite unintelligible and deglutition difficult. Tongue deviated to the right for a few days. Febrile symptoms disappeared after a week and the patient recovered the ground she had lost. Tactile and painful sensation was still absent on the left side, and muscular sense also appeared to be quite absent. She was now able to walk with assistance, but very unsteadily, and leaned much toward the right side; unable to stand alone. She afterward became able to walk by the aid of a stick. Sensation gradually returned but remained much impaired, especially in the left hand.

"The diplopia ceased to be noticeable, and there was some power of movement of the left eye inward, though the paralysis of the external rectus of the right eye remained. Muscular sense improved, so that she became able to tell the position of her limbs and to hold an object in the left hand with the eyes closed; but there was always great ataxy in all movements of the left hand, and she was unable to pick up a small object such as a pin without great difficulty. The left arm and leg were always blue, cold, and congested when the weather had been at all cold, and she experienced great difficulty in keeping the left hand warm, which also showed a tendency to chilblains. There was a very troublesome ulceration of the right cornea, which continued for many weeks in spite of careful treatment and was accompanied by iritis."

Fifteen months after the onset the general health was good. Walked alone with a stick, but very unsteadily. Sensation present everywhere, but very deficient over left hand, where prick of a pin cannot be localized and is delayed when felt. Heat and cold cannot be distinguished on left side of body. Tactile sense absent in left hand and very imperfect over arm and leg. Internal strabismus of right eye continues; pupils normal in size and reaction. Facial paralysis remains absolute, and right facial muscles do not respond to faradism. Knee-jerks equal and normal. No ankle clonus. Slight plantar reflex now on left side. No paralysis of soft palate.

The nature of the lesion is not clear, though the diagnosis of its situation presents no difficulty.

"The paralysis of the external oblique muscle of the right eye points to a lesion involving the sixth nerve or its nucleus on this side. Since the internal strabismus of the right eye was accompanied by a loss of power of movement of the left eye toward the right, it is clear that the nucleus of the sixth nerve, and not the nerve alone, is affected, for it is only in cases in which a lesion involves the nucleus that complete paralysis of the external rectus leading to internal strabismus is accompanied by loss of the conjugate movement of the other eye. The nucleus of the sixth nerve is connected with that of the third nerve on the other side by means of the posterior longitudinal bundle. The facial paralysis on the right side is total for all kinds of movement—volitional, emotional, and reflex—and is accompanied by degeneration of the facial nerve, as evidenced by the absence of response to faradism. It is clear, therefore, that the paralysis is due to a lesion of the nerve itself or of its nucleus in the pons. The fact that the orbicularis oris muscle is paralyzed indicates that the lesion involves the nerve and not its nucleus only, for it appears that that muscle derives its nerve-supply from fibres which arise at the hypoglossal nucleus but run in the course of the facial nerve. A single lesion involving the facial nerve and the nucleus of the sixth nerve can only be situated in the lower part of the pons. In this situation the facial nerve loops closely around the nucleus of the sixth nerve, so that a gross lesion, such as embolism or hemorrhage, which destroyed the one, could not fail to destroy the other.

"It is supposed that impulses of muscular sense are conveyed in the tract of the fillet; if this is so, the lesion must have extended as far forward as that tract, which lies at the anterior part of the reticular formation. It is obviously a small lesion, since it does not spread in the slightest degree inward beyond the middle line, nor outward as far as the fifth nerve, the ascending root of which is situated immediately outside the seventh nerve in the descending part of its course."

The lesion may have been due to the sudden thrombosis of a small vessel.—*Lancet*, No. 3667.

Sensory Dissociation following a Lesion of the Brachial Plexus.

Verhoogen (*Journal de Médecine, de Chirurgie, et de Pharmacologie*, 1894, No. 5, p. 65) has reported the case of a man who was thrown from a bicycle upon the right side of his body, suffering a subglenoid dislocation of the head of the humerus, together with loss of power, cyanosis, and depression of the temperature of the extremity, and loss of the radial pulse. The luxation was readily reduced and the symptoms disappeared, with the exception of the loss of power. Electric examination made several days afterward disclosed the persistence of absolute palsy in the affected member, the supinator longus alone contracting upon active stimulation. All forms of sensibility were slightly impaired upon the arm. In the cutaneous distribution of the circumflex nerve, however, sensibility was entirely lost; while shooting pains followed the course of the ulnar nerve. The most striking feature was a loss of the muscular sense and of the sense of position of the member, so that the patient felt as though he had lost his arm. There was also begin-

ning muscular atrophy, but no œdema and no cyanosis. The atrophy progressed and the muscles presented quantitative electric changes. The treatment consisted solely in the application of galvanism. Shortly the muscular sense began to reappear and gradually the muscles increased in size, and sensibility returned. The application of a blister to the shoulder was followed by a disappearance of the pain, and voluntary movements were in a little while resumed. Improvement thus gradually progressed, although a slight impairment of sensibility in the course of the ulnar nerve persisted, and perfect power was not regained in the arm. It is believed that as a result of the dislocation the brachial plexus and the vessels were subjected to compression by the head of the humerus. It is considered unlikely that there are distinct centripetal nerve-fibres for the conduction of the several forms of sensibility, but it is surmised that the same fibres act as the conductors of all, and that under certain unusual conditions the axis-cylinders may retain their power of conducting certain sensations, although they had lost the power of transmitting others, different qualitatively or quantitatively.

An Atypical Neurosis.

Bauer (*Berliner klin. Wochenschrift*, 1894, No. 5, p. 113) reports the case of a boy, thirteen years old, the son of a neurotic father, and who, at all times excitable and susceptible to slight influences, displayed from time to time outbursts of anger approaching in character actual mania. On one occasion the boy almost caused the death of a comrade. At other times, and when there was neither occasion nor opportunity to vent his feelings, the child would for hours remain uncommunicative and preoccupied. At times there would be a period of restlessness followed by a passionate outburst, like the aura of an epileptic attack. The peculiarity of the case resided in paroxysmal attacks of hyperæsthesia of the right foot. The sensitiveness was so acute that the slightest touch was sufficient to threaten a convulsive seizure. The first attack set in abruptly, without premonitory symptom. It persisted for seventeen days without variation in intensity, and subsided with the same suddenness with which it had begun. After an interval of six weeks a second attack just like the first took place, involving the same parts, marked by the same intensity, and having the same duration. Milder attacks of similar character recurred thereafter from time to time. All were characterized by suddenness of onset and termination, and lasted from twelve to twenty-six days, being succeeded by a free interval of varying duration. In most instances the local manifestations consisted of increased warmth, relieved by exposure to cold. There was no spontaneous pain, but exquisite sensitiveness to even the slightest touch. Exceptionally there was œdematous, colorless swelling, and on two occasions erythematous macular redness of the skin of the affected part. As a rule, these manifestations alternated between symmetric parts of the feet. On one occasion the side of the neck in the distribution of the spinal accessory nerve was affected. Shortly after this last occurrence, complete loss of hearing in both ears set in suddenly, lasting for thirteen months, and disappearing with equal suddenness. During the continuance of the deafness the local manifestations remained in abeyance. After the hearing had been restored two further

paroxysms occurred, in the latter of which the hyperæsthesia extended without intermission to the left foot, disappearing from both in the course of a few days. Now, for the first time, a feeling of weakness and uncertainty remained in both feet. Throughout the whole period of observation the general health had been conserved. Sleep was undisturbed; the appetite was good; the bowels moved regularly; growth progressed satisfactorily. The irritability remained excessive, but was not so marked as it had been. The opinion is expressed that the case belongs more properly in the category of erythromelalgia than in any other.

A Case of Addison's Disease, with Recovery.

At a recent meeting of the Berlin Society for Internal Medicine, Neumann (*Deutsche med. Wochenschrift*, 1894, No. 5, p. 105) presented a man, fifty-seven years old, in whose case a diagnosis of Addison's disease had been made by competent authority, but who had been free from symptoms of the disease for a number of years. There was nothing noteworthy in the family history. Syphilis and alcoholic excess were denied on the part of the patient. He had had relapsing fever at the age of thirty-seven and typhus fever at the age of forty-three. When forty-nine years old, marked asthenia rather abruptly made its appearance and continued with progressive intensity. The man came under observation after having fallen unconscious on the street. At the time sleep was disturbed, breathing was difficult, and slight cough was present. The general nutrition was fairly well preserved, but the skin generally presented a reddish-brown discoloration, resembling the hue of an Indian, or of coppery bronze. Upon the face and the upper and lower extremities the color was rather of a yellowish-brown, while upon the trunk it was darker, and particularly so upon the neck, the lateral aspect of the thorax, the abdomen, the flexures of the knees, the sacral region, and the anal folds. The color was not especially marked upon the nipples and the genitalia. The conjunctiva was pale and not discolored. The lips and the mucous membrane of the cheeks, and in less degree the hard palate, presented bluish-black punctation, but otherwise appeared intensely anæmic. The soft palate and the pharynx displayed no change in color. A soft systolic murmur could be heard at the left base, and a loud hum in the veins of the neck. No noteworthy abnormality was detected in the lungs, liver, spleen, or kidneys. The physical weakness was extreme. Sensibility was not deranged. Tremor was present, associated with a feeling of chilliness and aggravated by intended movement. Improvement was exceedingly slow and interrupted. More than two years elapsed before the patient was able to get about in his usual way, and it was some months later before he was able to resume his occupation as a coal-carrier, and then not with the same degree of vigor as before. The intention-tremor never entirely disappeared, and was intensified by intercurrent disease. At no time, however, had there been spasm, atrophy, or ataxia. The tendon-reflexes generally were, and remained, exaggerated. The special senses displayed no abnormality and the fundus oculi presented no unusual pigmentation. For a time there was pain below the level of the false ribs on either side. As the anæmia subsided the basic systolic murmur and the hum in the neck dis-

appeared. For a time the urine contained an undue amount of indican. Subsequently to his recovery the man had successively an attack of pneumonia involving the lower lobe of the left lung, an attack of influenza, an attack of supra-orbital neuralgia, a second attack of influenza, an attack of sciatica, and finally a third attack of influenza. Numerous examinations of the blood were made and the number of red cells was found to vary between 1,180,000 as the minimum, and 7,700,000 as the maximum, without increase in the number of colorless cells. The maximum was reached long before recovery had set in and a return to the normal number had taken place. This is construed to indicate the occurrence of a regenerative hyperplasia of the red blood-corpuscles comparable to that which takes place after loss of blood by hemorrhage, as well as in the course of other diseases attended with blood-disorganization.

SURGERY.

UNDER THE CHARGE OF

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CONTRIBUTION TO THE STUDY OF ANAL TUBERCULOSIS.

HARTMANN contributes an exhaustive article (*Revue de Chirurgie*, 1894, No. 1) on this subject. He states that tuberculous fistulæ in the region of the anus may originate in neighboring organs, as the prostate, adjacent bones, etc. There is also a variety of peri-anal subcutaneous tuberculous gumma which corresponds to those found in other regions. With these the author does not concern himself. Particular attention is called, however, to a form of tuberculous ulceration peculiar to this region, and which appears at the muco-cutaneous margin of the anus, usually just within the canal, and results in the formation of a fistula. The relation of anal fistulæ to pulmonary consumption is of interest. In 626 phthisical patients the author found and operated upon 31 fistulæ. The proportion was 6 per cent. in men and 3.5 per cent. in women. In 48 cases upon which the author operated for fistulæ, undeniable signs of pulmonary tuberculosis were found 23 times; 2 other patients gave a tubercular family history; while in 23 cases the patients seemed to be free from tuberculous trouble. Of 114 cases of diarrhœa in phthisical patients, 8 were found to have fistulæ, a proportion a little larger than that found in all tuberculous cases. In only 1 case in the 48 patients operated upon did the diarrhœa continue after operation.

Having established the connection between phthisis and these fistulæ it does not follow that all fistulæ in phthisical patients are tuberculous. The author does not accept the view that anal fistulæ in phthisical patients begin as abscesses, but states that they usually originate in the anus.

Although the fistulæ may extend high up the rectum the internal orifice will be found near the sphincter. In 41 cases the rectal mucous membrane was carefully examined at the time of anæsthesia and after dilating the anus, and only twice was ulceration in the rectum proper found, which could possibly be tuberculous. Nor have any ulcers been found in connection with abscesses. Therefore the theory that these fistulæ are due to tuberculous ulcers has not been confirmed in the author's experience.

Of 10 suppurating cases, tubercle bacilli were found in 6; in 1 case the tubercle bacilli were associated with streptococci and staphylococci pyogenes aureus, and in 5 the bacterium coli was found. In some cases there were no evidences of any other tuberculous lesion. It appeared, therefore, that the anal lesion was primary. Hartmann concluded that the tuberculous abscesses of the anus result from local inoculation of a superficial excoriation by tubercle bacilli in the feces. It is at the region of the sphincter that these abrasions exist, hence the abscesses at this point.

Operation has been objected to by some authors on the ground that the wound would not heal, and that if it did a useful outlet would be suppressed. Both of these premises are incorrect. In regard to the fear of generalization after the operation the author states that in 154 operations in the Hôpital Bichat during the last few years, in not one has there been generalization of the disease.

The following considerations refer to muco-cutaneous ulceration at the margin of the anus:

Etiology. Of 29 cases observed, 22 were in men, 6 in women, and 1 in a child. Diarrhœa is more frequent than in fistulæ; this was noted in 12 cases and probably occurs more frequently than has been supposed. Only 3 of these patients suffered from hemorrhoids. One had a previous fistula, and one an eczematous eruption. All of the patients had pulmonary lesions, some far advanced.

Symptoms. At the beginning of the ulceration there have been no definite symptoms, merely a little uneasiness or discomfort at defecation. There is a tendency for the ulceration to extend upward on the mucous membrane—an ulceration of the anal canal proper. The pain is very variable and the course of the ulceration is slow.

Treatment. As these cases are usually complicated with intestinal and pulmonary lesions general treatment is always necessary. Locally, silver nitrate, long persisted in, may be of some benefit. The galvano- or thermo-cautery may also at times be indicated, but usually the bistoury will be required. Frequently it is best to cut away the ulcer and cauterize the base. The wound should be packed with iodoform gauze. In this way permanent cures may be looked for.

The Treatment of Lupus Vulgaris.

In a contribution on this subject, Schuetz (*Archiv für Dermatologie und Syphilis*, 1894, No. 1) recognizes the fact that there are forms of lupus in

which all methods of treatment are useless. In other cases, especially in those where there are isolated spots of disease, doubt can scarcely exist that the radical excision extended into healthy tissue is the only rational method of treatment. For the relatively frequent condition of extensive lupus ulceration of the skin of the face, the method of excision with skin-grafting by Thiersch's method is open to objections, and does not always give good results. In these cases he has obtained very favorable and lasting results by the following treatment: The lesions are subjected to the most energetic scraping, after which the surface of the wound is thoroughly scarified, the scarification being carried a distance of about one centimetre on the surrouning healthy tissue in order to reach any outlying foci. After hemorrhage is arrested the raw surface is repeatedly brushed with a cold alcoholic solution of zinc chloride to which sufficient hydrochloric acid has been added to keep the mixture clear. Severe pain follows this application, lasting about six hours. It may be relieved by ice compresses, after which compresses of boric acid water are applied for one or two days. After this, pyrogallic vaseline (1 : 4), which is to be changed three times a day for four days, is applied. The local use of the boric water is again resumed for four days, when the pyrogallic ointment is applied as before for four days. Then the boric water for three days, and the pyrogallic application for three days again. Finally, healing may be encouraged under mercurial plaster, iodoform, or boric acid salve; the author especially recommends the use of mercurial plaster, collodion, and a pressure bandage. Healing is said to be relatively quick, and to be followed by a good cosmetic effect. The basis of this method is the effort to reach the most minute points of disease which lie in the surrounding healthy tissue. It is impossible to guarantee against a recurrence, but for the best results the operation should be performed early. The danger of miliary tuberculosis is said to be no greater than would follow any other surgical proceeding, but whether the frequent application of the pyrogallic acid on an open wound is without danger is left an open question. Thus far the author has observed no ill effects from its employment. In the present state of our knowledge the author claims the best results will follow the combination of energetic surgical and chemical treatment.

Contusion and Rupture of the Ileum without External Wound; Cœliotomy; Recovery.

Wiggin (*New York Medical Journal*, vol. lix., No. 3) reports the following case: A. M., fifteen years of age, colored, was kicked in the right lumbar region by a horse; in a few minutes nausea and vomiting followed. An examination of the patient, the evening of the injury, showed evidences of beginning peritonitis. There was no mark of external violence. The treatment consisted in the use of morphine hypodermatically, fluid extract of ergot by the mouth, and an ice-bag on the abdomen. Twenty-four hours later the signs of peritonitis were plainly visible. Cœliotomy was decided upon. A four-inch incision was made in the median line between the umbilicus and the pubis, and the cæcum sought for. When this was found the small intestine was drawn out of the wound and examined inch by inch. It was somewhat distended, and presented a fibrinous exudation with slight

adhesion. At one point a pronounced ecchymosis was discovered near the mesenteric attachment. This was passed, however, and higher up a knuckle of ileum was found so dark in color that the restoration of its vitality seemed impossible. Accordingly about six inches of this portion of the intestine was resected, including the discolored portion. Safety-pins were used for clamps, the mesenteric vessels were separately ligated, and the cut margin united by a continuous suture. The ends of the ileum were brought together and united by Maunsell's method, except that the margins of the wounds were not painted with Woelfler's solution, nor was the iodoform employed. Before the union had been made the patient partially recovered from the ether, and on account of straining and efforts at vomiting, a quantity of blood and fecal matter escaped into the peritoneal cavity. This accident was attributed to the large size of the safety-pins. To disinfect the parts a large quantity of a fifteen-volume solution of hydrogen dioxide was poured into the cavity and allowed to remain during the completion of the operation. Finally, the cavity was flushed with normal sterilized salt solution, and as much allowed to remain as the cavity would contain. The external wound was closed without drainage. Recovery followed promptly, and by the ninth day the patient was allowed his usual diet. The points of interest to which the author calls attention are the following:

1. Hemorrhage, which in recorded cases, successful and unsuccessful, occurred only once (Croft's case), and this was very slight.

2. The slight amount of shock when the patient was first seen, four hours after the accident, the temperature and pulse being normal.

3. The excision of the contused and perforated portion of the ileum, and the end-to-end union by Maunsell's method, which is comparatively new and has not been employed many times.

4. The use of hydrogen dioxide in full medicinal strength for the purpose of disinfecting the general peritoneal cavity, this being the second successful case in which it has been used.

5. The closing of the abdominal wound leaving the peritoneal cavity full of hot sterilized salt solution, the object of this being to lessen adhesions, to lessen the danger of septic peritonitis, and to aid by osmosis the action of the intestine.

6. The shorter duration of the operation.

7. In the after-treatment the early administration of peptonized food (twenty-two and a half hours).

From a careful study of recorded cases the failure of surgical measures is shown to be due to:

1. Delay, which has been responsible for the largest number of deaths.

2. Hemorrhage.

3. Failure of the suture and septic peritonitis.

Delay in the future will be obviated by a better understanding of the early symptoms by the general practitioner. The important factors in the diagnosis are the history of injury, persistent nausea, hemorrhage, prolonged shock, rise of temperature, increasing rapidity and weakness of the pulse, increased frequency of respiration, rigidity of the abdominal muscles, persistent pain with or without pressure, and the facial expression. Hemorrhage after operation is to be avoided by greater care in tying the mesenteric

vessels, which should be ligated singly and not *en masse*. Failure of the suture will be less common with improved technique, as by Maunsell's method, septic peritonitis will be obviated by the liberal use of hydrogen dioxide, if infection is known to exist, and leaving the abdominal cavity full of hot sterilized salt solution. The author also calls attention to the importance of having an experienced and competent anæsthetizer.

Concerning the Alteration in the Length of the Lower Extremity in Dislocation of the Hip-joint.

Riedinger (*Deutsche Zeitschrift für Chirurgie*, Bd. xxxvi., S. 102) states that the methods usually employed in determining the amount of lengthening or shortening of the limbs in cases of hip-joint dislocations give erroneous results. He claims that the measurement taken from the anterior superior spine of the ilium will show less alteration than if the measurement be taken from the middle line of the body. It is recommended, therefore, in such cases to take the measurement from the symphysis pubis. The comparative measurements are given in four cases. One of these was a perineal and another an obturator luxation. In these, measurements from the spine indicated shortening, but when taken from the symphysis a lengthening was shown as compared with the sound side.

The Etiology of Chronic Hernia, with especial reference to the Operation for Radical Cure.

Bishop (*Lancet*, 1894, vol. i., No. 6), in an interesting article, shows by quotations from a number of eminent authorities the frequent failures that follow the operation of so-called radical cure. The author formulates the prevailing ideas as follows:

1. Hernia is a protrusion of viscera from their normal plane, through the walls which ordinarily contain them.

2. That viscera that are normal, contained within walls of normal strength, do not protrude.

3. If viscera protrude, such a condition is due to (*a*) an inordinate strength of their attachments (the mesentery); (*b*) an abnormal attachment of the mesentery to the back of the abdomen (Lockwood); (*c*) constitutional weakness of the walls and abnormal patulousness of the normal orifices (Mitchell Banks); (*d*) effects of injuries, operations, sudden strains in lifting, etc.

4. Reducible, incarcerated, obstructed, and strangulated hernia are all varieties of the same condition.

5. The results of operation for radical cure upon all varieties should influence our prognosis as to the prospects of any one.

Particular stress is laid upon the fourth proposition. Excluding congenital hernia, the author suggests that all other cases are naturally divisible into two classes —acute or strangulated and chronic or reducible; and further that these are distinct in causation, pathology, and course, and that their prognosis and treatment should be separately considered. Under chronic hernia are included the incarcerated and obstructed varieties.

Causation. The exciting causes of acute hernia are doubtless those

usually given, viz., strains, as by sudden lifting, etc.; but it is stated that these cannot produce chronic hernia, the causes of which are comparatively slight, and from within, but which act continuously or frequently. The one is unavoidable, but happens seldom; the other is curable or avoidable, but happens frequently.

Pathological appearances. The sac in chronic hernia is slowly produced, and is never tightly distended; it lies in folds at the point of exit from the abdomen. These folds radiate outward and upward over the parietes, and tend to unite when once the efficient cause is removed, so as to form a collar at the level of the ring.

Course. The course of chronic hernia may be divided into three stages:

1. Pre-hernial, or that which precedes any external evidence of hernia. It is peculiar to this variety.

2. The stage of growth, which lasts from the time of appearance to the period when the efficient cause ceases to act.

3. The stage of rest, when the efficient cause is removed and only subordinate or accessory causes remain operative.

In acute hernia there is but one stage which is terminated by operation, unless reprehensible delay is permitted, when there are two—the stage of tension and the stage of gangrene.

The results of treatment should be kept distinct. In the acute variety the state of the intestine is of the first importance; in the chronic variety, the condition of the abdominal wall. In acute hernia operation is a matter of immediate necessity; in the chronic form, one of convenience. In the acute variety the risk to life is great; in the chronic it is practically *nil.* In acute hernia the vitality is already, before surgical interference, greatly lowered, so that the expenditure of a few minutes more or less over the operation may make the difference between life and death to the patient; in the chronic variety, the time expended on the operation is of secondary importance, so that every detail as to technique may be carefully attended to. After operation for the cure of chronic hernia the foundation for relapse is often laid during the first week, when the parts are still in a plastic condition, and when, if the efficient causes are still acting, a return is unavoidable.

If the viscera protrude, it is due to:

1. The inordinate length of the mesentery.

2. Abnormal attachment of the mesentery to the spine.

3. Constitutional weakness of the walls and abnormal patency of the normal orifices.

4. The effects of injuries, operations, strains, etc.

The influence of constitutional weakness, and the effects of injuries, etc., the author meets with the following statements:

1. A careful study of pathological specimens of reducible hernia reveals none of the changes usually to be found in lesions of other parts of the body, due to sudden causes. It reveals, rather, very definite and well-marked differences between herniæ which have been produced suddenly, *i. e.*, strangulated or acute, and those now under consideration. The appearances, as actually seen, are such as are only compatible with the action of a comparatively gentle but prolonged continuous or frequently intermitting force.

2. A superficial inquiry in the case of a reducible hernia will usually elicit

a declaration of injury, but careful cross-questioning will frequently reveal some condition antecedent to the injury mentioned, which is the real cause.

3. Many persons suffering from hernia are men who have enjoyed continuously good health, are descended from healthy parents, are physically stronger than their fellows, and many have shown, by the fact that they have reached a ripe old age in spite of this drawback, that they are of good constitution.

In explaining the formation of a chronic hernia the author calls attention to the following points:

The abdomen is a closed cavity, the wall of which is composed of three layers; of these, however, the cutaneous may be disregarded, inasmuch as it offers no resistance to the outward progress of the hernia. The muscular coat is quite resistant, but is incomplete at certain points. The peritoneal covering is complete, but offers less resistance. As the contents accurately fill the cavity, if the abdominal wall contracts, the internal pressure is increased and there results slight bulging of the peritoneum at the points at which the muscular wall is incomplete. At first the peritoneum resumes its normal condition after the pressure is removed, but finally, after the bulging has occurred a number of times, the elasticity of the parts is diminished and the pouching becomes permanent. In this stage there may be no symptoms or if present are apt to be so slight as not to be noticed. There are, however, a number of exceptions to this rule, illustrations of which are cited by the author.

Attention is called to the fact that the folds which are seen at the neck of a hernial sac, and which radiate for some distance on the parietal peritoneum, are observed only in the acquired reducible form, and are never seen in a congenital or an acute hernia. The effect of bronchitis in causing a constant cough, and of occupations which frequently demand a strain upon the patient, are considered the efficient causes of hernia, which will surely develop once the pouching of the peritoneum has occurred, if the efficient causes remain active. The author has illustrated the views expressed by frequent references to specimens from the Museum of the Royal College of Surgeons and by numerous clinical cases.

In an attempt at radical cure of chronic hernia the choice of operation becomes a matter of great importance. Any plan will probably fail, however, if the cause which originally produced the condition is not removed. To be certain of its previous removal, it is obviously necessary that there should be no doubt as to its identity. This is the task which the author has assumed, and from his study he believes the following conclusions are justifiable:

1. That chronic and acute hernia are absolutely different things, agreeing only in the fact that they are both protrusions of viscera through their normal environments.

2. That they differ in etiology, pathology, and course.

3. That, especially from the point of view of radical cure, it is important to distinguish between them.

4. That in discussing the feasibility of operations for radical cure, and especially the permanency of their results, the etiology of chronic hernia is of immense importance, since an operation for the cure of the results of a cause is almost certain to be useless whilst the cause remains in operation;

and if the cause can be found the patient may be warned to avoid it after the operation has been performed, in order that permanency may be rendered more probable.

5. That in the case of chronic hernia the cause is never one acting suddenly and singly, as overlifting, strains, falls, etc., but always one acting slowly, persistently, gently, habitually (such causes are difficulties in urination and defecation, certain occupations, and, chiefly and most prominently, coughing in all its forms).

6. That the claims of any operation for the radical cure of chronic hernia cannot at present be properly estimated, and that they never can be unless acute and chronic herniæ are absolutely separated, and the true effective causes of them are duly appreciated, other causes being previously carefully eliminated.

Enterectomy by Paul's Method.

Paul reports the following (*British Medical Journal*, 1894, No. 1727): Woman, aged fifty-one years, was admitted to the hospital, having a strangulated femoral hernia with the usual symptoms. After exposing the intestine, an area was found which had already begun to slough, and from which the contents made their appearance. An incision was therefore made in the median line of the abdomen, and after carefully cleansing the hernia it was drawn into the abdominal cavity, care being taken to prevent contact with the peritoneum in the proceeding. After clamping above and below, the injured portion was cut out with scissors, together with the corresponding mesentery, bleeding-points were ligated, and the divided ends united by a bone tube as recommended by the author. The proximal extremity was dilated, and the distal end contracted, so that it was found impossible to invaginate the former into the latter as the author had heretofore done. It was, therefore, necessary to employ a tube of small size ($\frac{5}{8}$ in. x $1\frac{1}{4}$ in.), fastening this in the distal portion, and by means of the traction thread this was then invaginated into the proximal end—in a direction, therefore, against the current of the contents, and although this method had been found to give good results in the case of experiments on dogs, the author hesitated somewhat about employing it in practice. The patient made a good recovery. During the first twenty-four hours the patient was allowed the yelk of an egg, two ounces of brandy, and some beef essence. This was gradually increased as the condition of the patient warranted.

Horricks details in the same journal the following case: A woman, aged thirty-eight, was admitted to the hospital with intestinal obstruction and with severe abdominal pain. Above Poupart's ligament, on the right side, a solid tumor was felt. An exploratory incision was made, which disclosed a tumor implicating a considerable portion of the small intestine. The wound was closed, and the patient recovered from the operation without complication. Three weeks later an operation was performed for the relief of the obstruction. A 3-inch incision was made in the median line rather above the middle. The tumor was drawn out of the incision, and, after emptying and securing the bowel on either side, a V-shaped section of mesentery containing enlarged glands and the affected bowel was excised. After securing the bleeding

vessels a Paul's bone tube was introduced into the lumen having the smaller diameter, and after securing with continuous silk suture it was invaginated into the other open extremity in the manner advised by Paul. The portion of intestine removed measured 39 inches in length; the tumor was found to be a large round-celled sarcoma. The patient made an uncomplicated recovery, and was discharged well at the end of five weeks.

The Diagnosis and Operative Treatment of Solitary Hydatid Cysts of the Spleen.

After a careful discussion and report of a case operated on by himself, and a study with a summary of sixty-six cases, Trinkler (*Revue de Chir.*, February, 1894) comes to the following conclusions:

The facts cited speak clearly in favor of operative intervention in the treatment of hydatid cysts of the spleen. This intervention should have for its purpose the discovery of the cyst. Laparotomy, in the full acceptation of that term, should be employed—that is to say, with all the variations proposed by Messrs. Volkmann, Lindemann, Laudau, Sänger, etc., accommodating itself to the peculiarities of each cyst.

It is difficult to judge in theory of the merits or demerits of operative procedures, for they all have their good points. There are cases in which Volkmann's operation is apparently less dangerous; nevertheless, when the tumor is small with thick walls and few adherences, one can, without risking much, operate after the method of Lindemann, Sänger, or Pozzi. The last method is the ideal, as the cyst is removed entire.

As a general rule, the incision should be as long as possible; it never does any harm, especially if one desires to employ Volkmann's method.

Possibly one might have to put a couple of stitches more at the top and bottom of the incision at the end of the operation, but it will give the chance to explore all parts of the tumor, to determine its boundaries, its pedicle, and, in short, one will see the actual condition of the organ, a most important factor in planning the operation. As Koenig says, before all one must "see," and this is only possible by a free incision. Consequently the first incision is exploratory and on it depends the choice of operation.

The Antiseptic Power of Ichthyol.

From interesting bacteriological researches which he has carried on in the hygienic institute of the University of Greifswald, Abel (*Centralbl. für Bakt. und Parasit.*, 1893, Band xiv., No. 13) deduces the following conclusions concerning its antiseptic and bactericidal power:

1. The ichthyol preparations—ammonium ichthyol and sodium ichthyol—are capable of killing, in weak solutions and short time, the streptococcus pyogenes and erysipelatis. The working of the different preparations is just about the same. In suppuration arising from these bacteriological sources, ichthyol can be used with good results, as has been already shown by actual experience.

2. The staphylococcus aureus and albus, the bacillus pyocyaneus, bacilli of typhoid, ozæna, and anthrax, the spirillum choleræ Asiaticæ, possess a

greater or less resistance to ichthyol, that in certain cases is so marked that pure ichthyol must remain on them for hours before the organisms in the cultures are killed. This is not, therefore, the most useful antiseptic for these organisms.

3. Diphtheritic bacilli, in fresh colonies, were killed by weak solutions of ichthyol, while further developed colonies were overcome with greater difficulty. Therefore, although ichthyol is not useful in the therapeutics of diphtheria, it can be used in prophylaxis both as gargles and in internal medication.

4. Ichthyol has done good service in the treatment of typhoid and ozæna by making the irritation less harmful. It is, therefore, not impossible that also the other infectious diseases mentioned in paragraph 2 may be favorably influenced by ichthyol, whereby, although we can expect little from its antiseptic power, its chief influence may be hoped for in its action on the system.

5. It is recommended that ichthyol be employed only in substance or in a fifty per cent. solution, and where greater dilution is used only with greatest precautions. Weak solutions may contain pathogenic spores, as, for example, staphylococcus aureus, even for a long time, and one must run the risk of reproducing the disease by its use. Weak solutions that have been used before must be sterilized before they are used again, by heating, which can be done without injury to the antiseptic power.

A Case of Anthrax.

Burrell (*Annals of Surgery*, December, 1893) reports a case of anthrax, with clinical history and the results of bacteriological examination. The patient made a complete recovery after thorough excision of the growth. The author makes the following deductions from this case:

1. That where applicable the old and obvious method of treatment by complete excision of the pustule, when vital structures are not involved, is best.

2. That where extensive surfaces involving vital parts are involved, the treatment by injecting strong solutions of the most energetic antiseptics may be used.

3. That glandular swelling about the malignant pustule, and apparent systemic poisoning do not contra-indicate operative treatment.

The Radical Cure of Large Umbilical Herniæ.

Gersuny (*Centr. f. Chir.*, 1893, No. 43), after discussing the methods employed for closing wounds of the abdomen after laparotomies, recommends the following method for the prevention of relapse after radical operation for umbilical hernia. The method is similar to that employed by him in all his laparotomies. After the incision of the hernial sac, the umbilical scar tissue, which he finds usually adherent to the hernial sac, is resected, and the sac is separated by blunt dissection from the surrounding adipose tissue and then divided. The mesentery is then ligated, if present in the sac, and divided, the stump, together with any intestine, being returned into the abdominal cavity. The sac is then drawn out as far as possible and sutured at the level of the hernial ring; the suturing of the ring then follows.

The peculiarity of this operation lies in the following steps: The recti muscles are next found, most easily by extending the median incision upward in the line of the linea alba. The fibrous sheaths of the recti are divided in their median edges until a point is reached above and below the level of the umbilicus. The distance of the recti muscles from the umbilicus makes it necessary to dissect them out of their sheaths, and especially the tendinous lineæ transversæ, before they can be made to meet in the middle line. They are then united in the middle line by a running suture. The skin is then sutured after the removal of some of the adipose tissue or at least its free dissection up from the underlying fascia. The author believes that by this method he affords a strong support to that part of the abdominal wall about the umbilicus which is liable to be weakened by the spreading apart of the recti muscles.

DERMATOLOGY.

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PEMPHIGUS.

J. F. PAYNE, the well-known dermatologist of St. Thomas' Hospital (*Lancet*, 1893), considers the disease in its several aspects, and recognizes the following forms as being more or less accurately denoted by this name. 1. Pemphigus vulgaris, of which there is an acute febrile form and also a chronic or recurrent form. 2. Pemphigus foliaceous, an extremely rare disease. 3. Pemphigus vegetans, one perhaps still rarer. More doubtfully deserving of the name are: 4. Congenital traumatic pemphigus, a state of the skin that is mostly congenital, sometimes being called "epidermolysis hereditaria bullosa." 5. The so called pemphigus neonatorum. There is also a bullous syphilide that is sometimes called pemphigus syphiliticus. In addition to these we meet with forms of disease resembling pemphigus, which were formerly included under that name, but are now called by such names as erythema bullosum, dermatitis herpetiformis, hydroa, herpes gestationis, etc. The only character common to all forms of pemphigus is that the eruption consists of blebs. The question of the existence of febrile pemphigus, denied by some writers, is discussed, with the report of five cases, which show that acute outbreaks of pemphigus associated with fever, which mostly occur as episodes in the chronic form of the disease, are occasionally met with. Concerning the treatment, the writer is in accord with Hutchinson's estimate as to the value of arsenic, but thinks that there are certain

qualifications which should be kept in mind. In children and young persons it rarely fails to disappear under the use of sufficient doses. After middle life the drug loses some of its efficacy, and in aged people it seems to have very little effect. In these cases quinine, stimulants, and food should be relied on.

The Extirpation of Lupus.

Ricketts (*N. Y. Med. Journal*, 1893), advises the complete extirpation of lupus either with the knife or the curette, replacing the loss of tissue, where this is considerable, by skin-grafting. This mode of treatment is advised not only for lupus vulgaris, but for lupus erythematosus.

Papillary and Pigmentary Dystrophy.

Davier (*Annales de Dermatologie et de Syphiligraphie*, 1893, No. 7) has observed and studied histologically two cases of a disease of the skin and mucous membranes which he calls *papillary and pigmentary dystrophy*, it being the same affection which Pollitzer and Janovsky have described under the name *acanthosis nigricans*. Both patients were women, aged thirty-four and forty-two years respectively, in whom, during the evolution of gastric cancer, there was developed a modification of the integuments, characterized by a double process, papillary hypertrophy and pigmentation. The papillary hypertrophy existed around the natural orifices, upon the hands, about the umbilicus, upon the tongue, and in one case upon the gums. The pigmentation, accompanied by a verrucous and even papillomatous condition, was seated principally upon the neck, chiefly the nape, and in the articular folds, where it reached an extreme degree. Upon the trunk it assumed the form of macules similar to plane senile warts, and in some regions, as the wrists and elbows, small confluent plane warts. The beginning of the affection is insidious, but it develops and becomes almost general in its distribution in a few months. The affection is to be distinguished from Addison's disease, ichthyosis, senile warts, and psorospermose folliculaire végétante, with which last it presents certain analogies.

The histological changes consist in an enormous increase of the thickness of the corneous layer and a moderate increase in the thickness of the rete and the stratum granulosum. The glomeruli of the sudoriparous glands were absolutely normal in appearance.

A Mixed Case of Lues and Tuberculosis with Unusual Localization.

Fabry (*Archiv f. Dermatologie und Syphilis*, 1893, Heft vi.) reports a case of mixed tuberculous and luetic ulcer of the prepuce. The patient, thirty-five years old, had constitutional syphilis, having numerous scars over the body, the result of a syphilitic eruption, and was inclined to tuberculosis. At the time of observation ulcers existed upon the inner surface of the prepuce, which from the history and character of the lesions were diagnosticated as syphilitic, and iodide of potassium was accordingly prescribed. This treatment, although continued for some time, was without effect, the

ulcers extending peripherally and in depth. Under the use of sublimate dressings healing took place, but hardness and deep infiltration still remained. Ulceration shortly again occurred, involving the frænum, which it destroyed. A small piece of the prepuce was now excised and examined microscopically by Prof. Ribbert, of Zurich, who pronounced it tuberculous. Under the use of carbolic acid and sublimate dressings, together with mercurial inunctions, a permanent cure was eventually obtained.

The Treatment of Itching.

Bronson (*N. Y. Med. Record*, 1893), in a paper upon this subject, discusses the various measures useful in relieving this very common and often distressing symptom. These measures are:

A. *The Removal of Local Excitants.* Irritating contacts of all kinds are to be scrupulously avoided. Attention is to be given to the underclothing, which should be of the softest material. Extreme heat or cold must be avoided, as well as sudden changes of temperature. As local excitants may be intra- as well as extra-cutaneous—as when due to toxic materials conveyed to the skin by the blood—depurative remedies, such as diuretics and diaphoretics, are, in proper cases, to be employed.

B. *Sedatives.* Used internally these are less satisfactory than when applied to the skin. The bromides are often of benefit, and hypnotics, such as sulphonal, are occasionally needed. Two internal remedies especially worthy of mention are cannabis indica and gelsemium. Phenacetine and antipyrine are likewise useful. Among local sedatives carbolic acid is the most reliable, and the author recommends its employment in the following formula:

℞.—Acid. carbolic. . . . . ʒj–ij.
Liq. potass. . . . . ʒj.
Ol. lini . . . . . ʒj.—M.
Sig.—Shake before using.

Salicylic acid and salol act similarly to carbolic acid, but are less effective. Thymol is also useful, but on account of its irritating effect is contra-indicated when the skin is sensitive. Corrosive chloride of mercury also possesses anti-pruritic properties. Cocaine often gives satisfactory results in localized forms of pruritus about mucous orifices and upon abraded surfaces. Water of the temperature of 100° F. and over is likewise useful.

C. *Sensory Stimulants.* It is more especially in such forms of pruritus as are associated with hypopselaphesia [*sic*] that remedies of this class are indicated. Among these agents electricity, either as galvanism or faradism, is of benefit. Strychnine is also of value.

D. *Substitutive Irritants.* Menthol, which is one of the best palliatives of itching, in the author's opinion acts, not by direct inhibition of the molecular movements of the sensory nerves, but by substituting an exaggerated temperature-sense for the perturbed sense of contact.

E. *Alterations of Cutaneous Nutrition.* Jaborandi probably belongs in this class, and is especially useful when the skin is hot and dry. Among the local remedies are ichthyol (5–10 per cent.), tumenol (25 per cent. or pure), occasionally tar, resorcin (3 per cent.), and benzoic acid or benzoin. The author, observing the fact that a large proportion of remedies that allay itching are

oxidizing agents, was led to make trial of solutions of hydrogen peroxide with satisfactory results.

F. *Motor Depressants.* Among internal remedies gelsemium and jaborandi belong to this class; and the good effects of atropia are probably the result of the secondary or depressant action of this drug. Of the local remedies the first place belongs to hot water. Here also are to be included hydrocyanic acid, conium, arnica, and chloroform.

Investigations Concerning the Fungus of Favus.

Biro (*Archiv f. Dermatologie und Syphilis*, 1893, Heft 6), as the result of his investigations, arrives at the following conclusions:

The fungus of favus is distinguished by variations in behavior upon different nutrient media.

Cultures prepared from crusts experimentally obtained differ slightly from those employed to produce the crusts.

The apparently different favus cultures lose, in a certain measure, their differential characters after re-inoculations continued for a long time upon the same nutrient medium.

Therefore, it results that there is a certain relation between the aspect of the favus culture and the nutrient medium upon which the fungus was cultivated; that the fungus adapts itself to the soil upon which it is nourished. Since the fungus adapts itself to the soil, and since, after re-inoculation continued for a long time upon the same nutrient medium, the apparently different cultures obtained by different authors lose in a certain measure their differential features, we are not certain whether the authors have not observed one and the same fungus.

We have no ground to assert that there are several fungi of favus.

Extra-genital Vegetations.

Gemy (*Végétations Extra-genital*, Algiers, 1893), in a monograph upon this subject, arrives at the following conclusions:

"Vegetations, warts, and molluscum contagiosum have the same parasitic etiology.

"This microbic agent, not yet discovered by the bacteriologist, exists incontestably from clinical evidence.

"All probabilities serve to establish the coccidial nature of this parasite.

"Treatment by excision and cauterization should be the great exception.

"The application of powders and, above all, salicylic acid and savin, are amply sufficient to fulfil almost all indications."

The Nature of Xanthomata.

Hallopeau (*Annales de Dermatologie et de Syphiligraphie*, 1893, No. 8), in a paper upon the subject of xanthoma, its proximate cause and complications, formulates the following conclusions:

1. The xanthomata are benign neoplasms of embryonal origin, *i. e.*, nævi, according to the recently formulated conception of these tumors.

2. They can be localized, as Koebner has shown, in a region occupied by a nævus.

3. They can form long bands following the course of the nerves, a disposition characteristic of nævi.

4. They are due, conformably to the views of Touton, to the persistence in the tissues and to the proliferation of embryonic cells which produce fat.

5. They can secondarily become the seat of inflammations, hyperæmias, or hemorrhages.

6. The tumors occurring upon the limbs, being very vascular, can be so effaced as to be with difficulty recognizable.

7. The jaundice which frequently accompanies the xanthomata is connected, conformably with the opinion of Kaposi, with their extension to the biliary passages.

8. The glycosuria which in a number of instances has coincided with them is connected, in all probability, with another visceral localization of the tubercles, the pancreas being their most probable situation.

9. This visceral localization is observed chiefly when the xanthomata occupy the limbs under the form of punctate tubercles.

10. The existence of macules in the neighborhood of the tumors shows that they are capable of undergoing a retrograde evolution; this fact, as well as the possibility of changes of volume according to the degree of repletion of the vascular system, explains the intermittence of the jaundice and glycosuria with which they may be accompanied.

OBSTETRICS.

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TWO FŒTUSES REMOVED FROM THE PERITONEAL CAVITY AT ONE OPERATION.

BYFORD (*American Journal of Obstetrics*, 1893), at a meeting of the Gynecological Society of Chicago, presented two fœtuses at about the same stage of extra-uterine development—*i. e.*, about four months. The patient from whom they were taken was in her eighth pregnancy and had a history of old pelvic disease. The uterus and appendages were found matted together in a conglomerate mass the size of two fists, with the intestines adherent over them.

A hæmatosalpinx was found on the right side, and beneath it a membranous sac adherent to the pelvis, containing a fœtus with the bones well preserved. After tying this off, another almost exactly similar sac was found on the left side. No definite placenta was found. The recovery was unusually smooth throughout, the temperature remaining below 100° excepting a temporary rise due to a stitch abscess.

Ectopic Pregnancy.

Martin (*Berliner klinische Wochenschrift*, 1893, No. 24) concludes his series of articles on ectopic pregnancy with a list of 41 cases of pure extra-uterine gestations divided into three groups.

In the first group of 14 cases, the ovum, more or less intact externally, lay in the ovisac. No blood had entered the abdominal cavity, but the ovum was in varying stages of maceration and resorption.

The second group includes 9 cases of rupture. 16 cases of abortion constitute the third group. In 2 cases both abortion and rupture obtained.

A. In the 14 cases of the first group, the duration of pregnancy was as follows: In first month, 6; second month, 3; third month, 2; fourth month, 2; eighth month, 1. The pregnancy in each case was interrupted through hemorrhage into the fœtal sac. The tube was intact; its external orifice open, and it contained no trace of blood.

In the 6 cases of one month and the 3 of two months, no coherent part of an ovum and no trace of a fœtus were present.

In the 2 cases at three months, in 1 the fœtus was found in the amniotic cavity. The same condition was found in 1 at four months and in the eight months case. In some cases the uterus, chorion, and amnion were separated by intruding clots, the intra-uterine ovum being involved. In others the ovum was wholly destroyed by blood and only the chorion tufts were left. In only 3 women were fœtuses found. If the ovum escapes into the abdominal cavity early, it is absorbed; later, it undergoes degenerative changes, and as such may be met with surrounded by, or mixed with, bloody detritus. What ultimately results from these ova is hard to say.

The 6 cases of one month and 3 of two months seemed to be on the way to safe restoration. The sac contents showed ovular fragments interspersed with coagula.

B. The 9 cases of rupture. It is striking that in 4 the ovum had isthmian insertion where the ampulla passes into the isthmus. In 4 the tubal end was inserted into one ovarian cavity, and the blood had no outlet save by rupture. In the others there seemed no hindrance to the escape of the blood by the physiological way. Three times the fimbriated end was agglutinated, four times the end of the ovary formed a firm mass, twice an ampullar hæmatoma; in 1, profound muscular atrophy at the point of insertion, and between the scanty muscle fibres lay great blood spaces. In 1 there was hernia of the tubal mucous membrane; in 4 the tube-walls showed traces of chronic salpingitis, the rupture occurring at the placental site. In 1 case the abdominal end was sharply bent, and ruptured immediately at the ovular insertion, so that the blood could not escape, and this had led to complete occlusion of the lumen of the tube. It appears, then, that in all cases of rupture peculiar difficulties existed which precluded the physiological way,

and in all cases rupture is the result of peculiar complications of the ectopic ovular insertion.

C. Regarding the cases of so-called tubal abortion the author says: In this third group it is worthy of note, that of 16 cases fourteen insertions of the ovum were in the ampullar part of the tube. The swelling thus occasioned lessened or prevented the escape of the blood by the abdominal mouth of the tube. In one case the tube was wrapped around an ovarian cystoma, both having grown together into a so-called ovarian tumor. In the other the whole tubal mass was greatly developed intra-ligamentously, and through peritoneal thickening the tube was shrunken peripherally from the ovarian insertion. Nevertheless the blood had forced its way through the narrowed channel and distended the abdominal mouth of the tube until it gave way laterally. It is also significant that of these 16 cases, in 9 the pregnancy had advanced to two months; in 4 only abortion took place in the first month; in 1 at three months, and in 2 during the fourth. The ampulla and isthmus are capable of retaining the ovum up to this point of size, but the wall becomes as thin as paper. The muscular elements suffer most; hemorrhagic foci separate them and the individual muscle-cells become cloudy or atrophied. The mucous layer, on the contrary, is little the worse; its longitudinal folds unite stellar-like before and behind the insertion of the ovum. As to the mechanism of the abortion, a self-originated contraction of the tube is improbable; in fact, its muscular elements are incapable of it. According to his observations, the author thinks the expulsion of the ovum is due to hemorrhage which occurs at the point of ovular insertion, arising either from incongruence between the ovum and its point of support, or from traumatic lesions. The bleeding may intermit or remit, or become massive, sweeping all before it. It follows the normal channel unless this be occluded, when rupture occurs.

Symphysiotomy.

Lewers (*Lancet*, London, 1893, No. 3649) reports a case of symphysiotomy done on a II-para. The external measurements were: between spines, $8\frac{1}{4}$ inches; iliac crests, $10\frac{3}{8}$ inches; external conjugate, $6\frac{1}{4}$ inches. One normal labor had previously taken place, but the child was very small—indeed, was supposed to be premature. Section of the pelvic joint was attempted by the aid of a probe-pointed bistoury, but it proving insufficient on account of ossification of the joint, an Adams saw was successfully used. The joint separated 5 centimetres, and the child was safely delivered by means of the forceps. After some complications the patient made a good recovery.

The Diagnosis of Pregnancy.

Lawson Tait (*Provincial Medical Journal*, 1893, No. 140), in a clinical lecture, points out the great difficulties experienced in obtaining truthful and correct histories from illegitimately pregnant women, and the great caution to be exercised by the obstetrician examining such patients. Several interesting cases are reported from his great experience, in which he himself and others have had but narrow escapes from grave errors in diagnosis through the untruthful histories given by patients. In closing, he recommends the

greatest care to be exercised, particularly in regard to the manner of asking questions as to the absence of menstruation. A question should be put in as casual a manner as possible as to when the last period took place; if within a month, exercise the utmost caution to prove that the case cannot be one of pregnancy. The great probability is that it is not one; but the patient may be untruthful, and even regularly recurring menstruation is not incompatible with pregnancy. If the answer given is to the effect that the last period was some months previous to the date of examination, and if the abdominal tumor is of a size which would be that of a pregnant uterus of corresponding date, the chances are infinitely in favor of pregnancy. It should also be ascertained whether menstruation was regular previous to its cessation, and if the ceasing was an abrupt one. If the latter, and the previous menstruations have been regular, the certainty of the diagnosis of pregnancy is complete. If the previous menstruations have been irregular and the cessation not sudden, the history altogether fails, and may be entirely neglected. It should be borne in mind that the adolescent anæmia of young girls suspends their menstrual show almost invariably, but it does not necessarily interfere with their productive capacity.

The Secretion of Human Milk.

Basch (*Archiv für Gynäkologie*, Band xliv., Heft 1, p. 15) gives in a most instructive and interesting paper the results of his investigations concerning the secretion of milk in the human female. According to various observers, traces of milk glands may be observed in a fœtus four centimetres long. These consist of a whitish spot one-half millimetre broad, minutely elevated, due to a heaping together of the cells of the Malpighian stratum. Later this becomes more marked and the spindle cells of the corium are bedded in a cellular stroma. A number of flask or cupped processes extend from the Malpighian stratum up into the cutis, and later become ducts. Gradually a wall forms around the central swelling, separated from it by a groove or depression. This wall in man remains small, while the central papilla grows and ultimately takes its permanent form. In the ruminants (as the cow) the outer wall grows, while the papilla remains within until it forms a tube or blind sac with the papilla at its bottom where the milk ducts open. In the marsupials (as the kangaroo) there is at the bottom of this sac or tube a small projecting nipple, so that in these animals we may find, as it were, the point of union of two systems of development, one leading to the human nipple, the other to the udder of the cow. After birth the degree of the development of the nipple seems to be parallel with the longitudinal growth of the child—the longer the child, the more the nipple is developed. In the formation of the nipple, both the gland foundation and the cutis take a part. Its construction represents a histo-biologic process which is the resultant of many components, of which one is active, one passive. The active element is the epithelium of the gland substance and nipple zone; the passive agent, the gland basis and its continuation into efferent rays. The nipple is made up of smooth muscle fibre, nerves, fatty tissue and vessels. A network of muscle fibres supports and surrounds the base and sends fibres upward. The nerves form cord-like bundles on the margins of the fat divisions and of the

gland stroma, some ending in the individual muscle fibres, some in the skin papillæ following the course of the vessels. The capillaries which enter each papilla of the nipple, surround the exit ducts and ramifications of the gland with a basket-like network. The veins surround the boundaries of the nipple in a polygon, and a deep venous circle returns the blood to the vena thoracica. The fatty matter is so distributed as to form a series of layers under the nipple area, so that this is uplifted above the surrounding level.

Three chief varieties of congenital malformations of the nipple may be recognized:

1, Papilla plata; 2, papilla fissa; 3, papilla invertita. Etiologically, these deformities represent various stages of arrested development.

The function of the nipple is both that of a mouthpiece to the gland and also of a closing apparatus. Its shape may be variously modified by the sucking efforts of the child. Numerous measurements show a relationship between the height of the nipple and the breadth of its base; the higher the nipple the smaller generally its base, and *vice versa*. It would seem that it is due to a contraction of the musculature of its base and papilla, and that the vascular apparatus plays only a subordinate part. Regarding the action of the nipple in suckling, he says: If it is desired to obtain milk from the nipple of a woman, it is necessary to squeeze its base between the thumb and forefinger. As the milk wells up from many small openings it will be seen that the nipple widens and shortens; a sort of lessened tonus seems induced. If the pressure be relaxed, the nipple erects itself again. This same condition probably obtains during the sucking of the child. Not merely does the tongue surround the nipple, but it also compresses it from base to apex with a slight drawing action. The aspiratory effort must also be remembered and considered. The aspiratory power of the child unaided is not sufficient to overcome the normal tonus of the muscular apparatus of the nipple. The compression of the base of the nipple is a marked and important constituent of the act of sucking. The alternating increasing and diminishing compression of the nipple, in connection with the aspiratory effort of the child, empties the breast in a rational and continuous manner, so as to maintain a due relationship to the child's breathing and acts of deglutition.

Two Cases of Uterine Rupture.

Bossi (*Nouvelles Archives d'Obstétrique et de Gynécologie*, 1893, No. 7) reports two cases of uterine rupture, in one of which the fœtus had penetrated the abdominal cavity. In this case the rupture occurred after violent uterine contractions, during podalic version, the fœtus slipping from the surgeon's hands into the peritoneal cavity. The patient had a contracted pelvis and was a IV-para, all previous labors having been premature and difficult. Porro's operation was performed and the pedicle, encircled by elastic bands, replaced in the abdominal cavity. The operation lasted twenty-five minutes. After twenty-five days all the elastic ligature came away by the vagina. Recovery complete.

In the second case rupture was not recognized. The case was one of placenta prævia in which podalic version was done. When the surgeon pro-

ceeded to extract the placenta he found the patient unconscious. The uterus was the seat of extensive rupture. Porro's operation was performed on this case also, the technique being the same as on the previous one. Profound collapse followed; the patient did not regain consciousness and died exhausted. The heart was found to be feeble, the valves being affected. After discussing the frequency of uterine rupture the author considers the causation to be due to narrow pelves, transverse presentations, and deficient uterine resistance. It is generally admitted that the point of least resistance is the inferior uterine segment, and this becomes less resistant by reason of the contraction of the longitudinal muscular fibres, which tend to elevate the inferior segment and thin it, while enlarging the fundus. In these two cases the rupture took place below during energetic contractions, the tear being longitudinal. He considers Porro's operation to be the best treatment.

Restoration of the Newborn.

Oehlschläger (*Centralblatt für Gynäkologie*, 1893, No. 31) contributes an article relative to the restoration of the newborn. In most cases he believes the failure of such efforts to be due to obstruction of the glottis by the backward pressure of the tongue, and advises that this be drawn well forward. Then, either by the direct application of the attendant's lips to those of the child or by passing a soft catheter into the larynx, the air can readily be caused to go into the child's lungs. Such cases are bluish or dark in the face. Should they, however, be pale and collapsed, indicating weakness or failure of the heart, then in addition to the above measures employ pressure to the cardiac region, making it rapidly and rhythmically, so as to imitate the normal heartbeat. As the walls are elastic and soft, direct heart manipulation may thus be practised.

A Contribution to the Knowledge of the Mucous Membrane of the Normal Uterus.

Hofmeier (*Centralblatt für Gynäkologie*, 1893, No. 33) contributes an article relative to the direction of the ciliary movement in the uterine mucous membrane. Having been induced to doubt the generally received assertion that the cilia wave from within toward the tubes, he caused numerous observations to be made on the uteri taken from recently slaughtered cows. As in all these the ciliary motion was from the tubes toward the external os, he then continued his investigations, using uteri freshly removed from women for various causes. The observations not merely included watching changes of position of minute particles scattered on the membrane, but also of the cilia themselves, the specimens being placed in fresh salt solution immediately after operation. The microscopic examination gave the following results: In all, seven specimens were examined; one uterus having been removed for sarcoma, the others for various affections, and in all the movement of the cilia was toward the os and from the tubes, except in one case where a small counter-current was observed, and in another where motion seemed altogether absent. In several, very slight motion could be seen. From these observations the author concludes that it may be asserted that uterine ciliary movement is from the tubes toward the external os; this being true even

in Case 2, who was fifty-three years old, although it is asserted that after the menopause ciliary movements cease.

Orbital Tumor in a Newborn Infant.

Courant (*Centralblatt für Gynäkologie*, 1893, No. 32) reports a case of singular orbital tumor in a newborn male infant. The child was normal in all respects save a large swelling of the left eye. There was protrusion of the bulb two centimetres beyond the root of the nose, which was separated by a shallow groove from an even tumor completely filling the orbit and mostly projecting beyond the lids. The circumference was 14.5 centimetres, diameter 4.5 centimetres. The tumor was readily removed, the orbit emptied with but slight bleeding, and a firm band which extended backward from it into the deep part of the cavity ligated and cut. Recovery was complete.

Under the microscope the contents of the tumor proved to be connective tissue, muscle fibres, mucous and sebaceous glands, hair roots, cartilage, and bone. Its embryonic origin was an anomalous formation of a secondary ocular sac.

Symphysiotomy.

Walcher (*Centralblatt für Gynäkologie*, 1893, No. 25), although not a special opponent of symphysiotomy, believes the operation should be limited to the utmost in its scope. Out of five hundred and fifty births per year in his establishment, he has as yet had no occasion to perform the operation. In the last year he has had to perform Cæsarean section but once for narrowed pelvis, all the other labors in this class of cases having come to a fortunate end for the mothers and generally for the children. The condition of the symphysis after the operation is also an objection. In many cases there is either a loose joint or ankylosis—both great disadvantages to the patient. The design of the symphysis is to form with the sacro-iliac joint an elastic, springy connection between the thighs and the vertebral column. This is so constructed that the haunch bones and sacrum do not move in one axis, but that the pelvic planes converging from before backward form two co-operating axes, which for the execution of a movement require a sliding of the haunch bones in the symphysis. If the symphysis be ankylosed, the movement in the sacro-iliac joint is lost. When this occurs the jar in walking will be transferred directly to the spine, a most important point in the movements and carriage of the patient. A loose joint in the symphysis lessens safety. Concerning the manifold injuries of bladder and urethra already published, the author believes that even with improved technique not much better results will follow in the future.

General Puerperal Paralysis.

Sottos (*Archives de Tocologie et de Gynécologie*, 1893, No. 6) reports the case of a woman, aged thirty years, of neuropathic antecedents and general ill-health, having had successively several difficult pregnancies followed by painful labors, who was almost immediately taken with an ascending paralysis. The disease appeared rapidly, invading the limbs and trunk with no cephalic

symptoms. The face was intact, but the tongue was affected. The onset was accompanied by acute pain, little alteration of objective sensibility being observed. Marked muscular atrophy and disappearance of faradic contractility followed. There was also present some irregularity of the sphincters. The malady was at its height in three weeks and remained stationary two months, when the paralysis began to amend. Phthisis set in and death followed three months after onset of paralysis.

The diagnosis of either acute polyneuritis, general acute anterior paralysis, or of diffuse central myelitis was made. Although these affections are difficult to separate, yet the acute pains and rapid extension of the paralysis to the limbs, trunk, and tongue, without any accident menacing the life of the patient, indicate peripheral neuritis.

GYNECOLOGY.

UNDER THE CHARGE OF

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Extirpation of the Urethra for Carcinoma.

Zweifel (*Centralblatt für Gynäkologie*, 1894, No. 1) presented a patient before the Leipzig Obstetrical Society upon whom he had operated successfully for cancer involving the urethra. The woman, aged thirty-eight years, had been declining in health for a long time, although the local symptoms were of only a few months' standing, *i. e.*, dyspareunia and pain on urination. She had had no hemorrhage. On examination, the meatus was found to be encircled by a fungoid ulcerating growth, which also involved the clitoris; a specimen removed by the curette was examined microscopically, and was found to be epithelioma.

The operation was as follows: A circular incision was first made around the urethra, then symphysiotomy was performed, a chain-saw being required to separate the bones. The urethra was freed from its attachments, and the crura of the clitoris were dissected out as far as their attachment to the bone. The urethra was then split, in order to determine the exact extent of the disease, which was found to involve the sphincter vesicæ and a portion of the posterior wall of the bladder. The ureters were located by palpation, as their openings could not be identified. The diseased tissue was excised a little at a time, as it was necessary to stop at intervals and apply ligatures, on account of the profuse hemorrhage. The bladder was closed by a double row of sutures. In order to remove the entire urethra and clitoris, the anterior vaginal wall was divided transversely, and the hemorrhage was controlled temporarily by suturing the edges of the wound with continuous catgut. The symphysis was then united with wire, and the external wound was closed.

An artificial urethra was next constructed in the following manner: The

abdomen was opened by a median incision just above the symphysis, when the uterus was found to be fixed in a position of retroflexion (with adhesion of the left tube) in such a way as to exert traction on the bladder. The adhesions were separated, a small incision was made in the posterior wall of the bladder, and a rubber drainage-tube was inserted, stitched into the opening, and carefully surrounded with peritoneum. The tube was isolated from the general peritoneal cavity by drawing the omentum down beneath the vesical opening. The abdominal wound was closed in the usual way, the tube (furnished with a stopcock) being allowed to protrude from its lower angle. The large cavity left behind and below the symphysis was tamponed with sterilized gauze, and the cleft in the anterior commissure of the vulva was sutured. The hips were encircled with wide strips of plaster, as after a puerperal symphysiotomy.

The patient's convalescence was uninterrupted. The sutures in the bladder held perfectly, and the viscus was emptied at regular intervals through the tube, the patient soon learning how to attend to it, opening the stopcock whenever she felt discomfort. She was discharged having a depressed cicatrix below the symphysis, but with the vaginal wound entirely closed by granulation, the vagina being of normal length.

[We have reported this operation at some length, because it seems to us a triumph of urethral surgery, only second to Pawlik's case of resection of the entire bladder for malignant disease.—H. C. C.]

The Abdominal Incision in Cœliotomy.

Abel (*ibid.*) claims that he always avoids ventral hernia by adopting the following technique: Instead of the median incision he makes one through the skin half an inch to the left of the linea alba. Exposing the sheath of the rectus, he opens it by a small incision and penetrates the muscle by blunt dissection until the posterior layer of fascia is felt, which is incised between forceps, as well as the peritoneum. The wound is then enlarged with angular scissors. In suturing no attempt is made to secure exact apposition of the edges. Previous to inserting the sutures the torn muscle is cleansed with a five per cent. solution of carbolic acid. From two to four deep sutures are introduced an inch from the edge of the wound, the edges of the skin being approximated with superficial sutures. A firm cicatrix results, and hernia has not been noted in any of the writer's cases.

Endometritis Exfoliativa.

Franqué (*Zeitschrift für Geb. u. Gynäkol.*, Band xxvii., Heft 1), after a careful study of this subject, arrives at the conclusion that in many cases the microscope alone does not furnish aid in making a positive diagnosis between early abortion, extra-uterine pregnancy, and membranous dysmenorrhœa.

Enteroptosis (Glénard's Disease) in its Relation to Gynecology.

Meinert (*Centralblatt für Gynäkologie*, 1893, No. 42) makes the sweeping assertion that probably the majority of gynecological patients suffer from prolapse of the gastro-intestinal tract. Movable kidneys and retroflexion of

the uterus may coexist and give rise to characteristic symptoms, yet these are not the main features in the case, the real trouble being general prolapse of the bowels. It is possible that many phenomena, such as chlorosis, hyperæmia gravidarum, menstrual disorders, etc., are really symptoms of enteroptosis (*enteroptosische Krisen*). Many women never feel so well as during the later months of pregnancy, when the prolapsed abdominal viscera are replaced in their normal position by the pressure of the enlarging uterus (!). The frequent inclination of the gravid organ toward the right is due to gastroptosis, and many gastric symptoms regarded by gynecologists as hyteroneuroses are undoubtedly due to the same displacement of the stomach.

[It is impossible to accept this theory in sober earnest. With all due deference to the writer's keenness of observation, it would seem as if he were seeking to push a recent "fad" to the extreme limit.—H. C. C.]

New Operations for Stenosis of the Os Uteri.

Vulliet (*Centralblatt für Gynäkologie*, 1894, No. 3) describes and figures an ingenious plastic operation for anteflexion and stenosis, the steps of which are as follows: With the patient in the dorsal posture the cervix is drawn forcibly downward and backward, and an incision is made at the vaginal junction, encircling the left half of the cervix. The vagina and bladder are separated as high as a point above the angle of flexion. The cervix is then split anteriorly up to this point, the bladder being held out of the way with a sound, and the uterus in a position of anteversion by another sound. A second incision around the cervix in the line of the crescentic incision is then made, forming a flap, which is then turned upward and sutured between the edges of the vertical cut, after which the vaginal wound is closed. A large sound can now be passed readily, and it will be found on examination that there has been a notable correction of the stenosis at the point of flexion.

Boryssowicz (*ibid.*) commends this procedure for simple stenosis of the os externum on account of its easy execution, painlessness, and permanent results. Drawing the cervix downward and backward, he introduces a special fenestrated sound into the cervical canal. A curved needle carrying a double silk suture is passed transversely through the cervix an inch above the os externum, traversing the opening in the sound. The latter is then withdrawn with the ligature, which is divided, and one suture is tied tightly with a surgical knot on either side and is cut short, the other two being tied loosely at first, and gradually tightened four or five days later. The vagina is tamponed with gauze, the patient being kept in bed for three or four days. Daily vaginal irrigation with bichloride solution is employed, and the ligatures come away at the end of two weeks, when the os will be found to present a transverse fissure.

Senile Endometritis.

Jacobs (*Polyclinique*, 1893, No. 10) does not believe that the menopause exerts a curative influence upon endometritis and resulting leucorrhœa. Endometritis after the climacteric may be accompanied by a malodorous discharge, which might readily awaken the suspicion of malignant disease, especially if the patient presents also emaciation, pain, and visceral disturb-

ances. Eczema, acne, or pruritus vulvæ are frequently present, and mucous polypi of the cervix are found not infrequently. The writer recommends curettage.

PATRU (*Revue Méd. de Suisse Rom.*, 1893, No. 5) compares purulent senile endometritis to ozæna. It usually occurs in women over sixty, and is sometimes of bacterial origin. The uterus may be of normal size, and not especially sensitive to pressure, though the introduction of a sound causes much pain. The patient may complain of pains in the back and pelvis. Her bad appearance, together with the foul vaginal discharge, may seem to point to cancer of the corpus uteri, though the examination shows nothing suspicious. Vaginitis is often present, and sometimes cicatrices—in fact the so-called "adhesive vaginitis" may be secondary to the purulent endometritis. The prognosis is favorable, since the affection tends to disappear spontaneously with advancing years. Malignant degeneration has not been noted as a result of senile endometritis; sepsis from prolonged suppuration is, however, a possibility. The treatment recommended is dilatation, curettage, and cauterization of the endometrium, with frequent antiseptic vaginal injections.

INOCULATION WITH CANCER.

SIPPEL (*Centralblatt für Gynäkologie*, 1894, No. 4) reports several cases which seem to confirm the now generally accepted view that healthy tissue may be inoculated by simple contact with a malignant growth. In one case a small circumscribed nodule was found behind the posterior commissure, where the cancerous cervix of a prolapsed uterus had rested upon it, the vaginal wall being elsewhere perfectly healthy.

In another an apparently simple multilocular ovarian cyst was removed, suspicious material from a secondary loculus escaping into the peritoneal cavity. The peritoneum was healthy. The patient was discharged in March perfectly well; but returned in October of the same year with extensive ascites, cancerous infiltration at either side of the cicatrix, at the sites of the sutures, and multiple nodules in the peritoneum, the nature of which was proved by an explorative incision. The presence of the minute cancerous nodules developing in the fascia at the needle-punctures seemed to support the theory of infection from the fluid which entered the peritoneal cavity at the time of the first operation.

A further proof that the constriction of the tissues by a suture may cause such a change in them as to furnish a *locus minor resistantiæ* for the development of secondary carcinoma seemed to be furnished in a case of vaginal hysterectomy, in which a piece of silk was found in the centre of a recurrent nodule in the cicatrix.

THE DIAGNOSTIC VALUE OF UROBILINURIA.

MANDRY (*Archiv für Gynäkologie*, Band xlv., Heft 3) summarizes the results of his observations as follows: In healthy puerperæ no excess of urobilin is noted in the urine, the reverse being the case after obstetric operations and laceration of the perineum. As a rule, urobilinuria is not present after minor gynecological operations, but only after difficult cœliotomies. It

possesses no positive diagnostic value in connection with pelvic hæmatocele, and may result from nutritive disturbances in afebrile as well as in febrile affections.

Menstruation and Ovulation.

Leopold and Mironoff (*ibid.*) conclude, from their surgical and pathological studies of this subject, that: 1. Menstruation and ovulation usually coincide, though the former often occurs independent of the latter. 2. Menstruation is directly dependent upon the presence of the ovaries and the normal development of the endometrium, and *not* upon the ripening and bursting of a Graafian vesicle. 3. Ovulation usually occurs at the time of the monthly flow in consequence of the increased congestion of the pelvic organs at this time, when a typical corpus luteum results. 4. Ovulation may occur at other times during the month, though seldom under physiological conditions. 5. Sometimes the increased blood-pressure due to the menstrual nisus may lead to the rupture of an unripe ovisac, when an atypical corpus luteum results. 6. Even after the climacteric, normal ovisacs may persist and may rupture physiologically, atypical corpora lutea resulting.

PÆDIATRICS.

UNDER THE CHARGE OF

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ASSISTED BY

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The Treatment of Hydrocephalus.

Wyss (*Correspondenzblatt f. Schweizer Aerzte*, 1893, No. 8, p. 289) reports a case in an infant aged eight months, in which repeated puncture produced very gratifying results. In the course of a year seven punctures in all were made. After each operation the symptoms of cerebral compression diminished; the sight, which had been greatly affected, returned to normal after the fourth puncture; and measurement of the head showed manifest diminution in all the cranial diameters. One year after the last puncture the child, then two years and three months old, was physically well developed, carried his head easily, could sit up, had twenty teeth, but could not yet walk. For a year he had had only one attack of convulsions, which had previously been very frequent. He heard well and had good vision, could sing and repeat words and phrases, but was incapable of forming them spontaneously.

In view of this success, the author confirms the reports of the advantages

of puncture made by other writers: disappearance of convulsions (Bergmann); favorable influence upon the physical development (Rehn, Phocas, Quincke, Karnitzky, Wyss); psychical development and re-establishment of vision (Wyss). The operation is not devoid of inconveniences, but these can be avoided. Cephalhæmatoma consecutive to the puncture is very rare in these cases, and can be avoided by puncturing the lumbar canal. Infection of the meninges, with consequent meningitis, is not to be feared when the operation is performed under rigid antisepsis. The collapse which has sometimes followed the puncture is never alarming. Finally the author concludes that puncture and aspiration of the cranium or of the lumbar canal are indicated in acute meningitis accompanied by phenomena of compression, in tubercular and syphilitic meningitis of slow progress, and in the increased size of the head observed after certain meningites.

Treatment of Whooping-cough by Rectal Injections of Carbon Dioxide.

Bergeon (*Lyon Mèdical*, 1893, No. 26, p. 254) suggests a new field for gaseous rectal injection in treating whooping-cough, a plan which he has used successfully in the case of his son, aged three years.

Immediately after a kink, provided three hours had elapsed since the ingestion of food, he administered a gaseous injection of from one to two litres of carbonic acid gas, containing a few centigrammes of pyridine. The child could eat immediately after the injection, which gave rise to no digestive disturbance. After a fresh kink the injection may be repeated at four-hour intervals. In severe cases it may be necessary to keep up the injections during the night. In some cases the injections have been given five or six times in the twenty-four hours. The most severe cases are said rarely to resist this treatment more than a week.

Local Treatment of Incontinence of Urine.

Pousson (*Journal de Médecine de Bordeaux*, 1893, No. 21) states that incontinence of urine in children may be classified under three pathogenic forms: 1. That dependent upon atony of the sphincter. 2. The vesical irritability of Trousseau, without any alteration of the sphincter. 3. Irritability of the membranous portion of the urethra, or contracture of the sphincter. Cases due to atony of the sphincter, and those dependent upon vesical irritability, as described by Trousseau, in which belladonna proves most efficacious, are easily understood; but in association with contracture of the sphincter, incontinence seems paradoxical. M. Janet has given this ingenious pathogeny: such children are neuropathic, emotional, and preoccupied all day by their urinary function, interrupting frequently their play and work to micturate—polyurics and pollakiurics. This watchfulness does not entirely remit at night: when they sleep deeply they return to it, and imbue their dreams with the desire to micturate, just as they constantly introduce it into their sports by day.

In all these forms the different medicinal remedies are not to be neglected; but when they fail, it is necessary to have recourse to local treatment, which

acts by excitation of the sphincter. The induced current is the more commonly employed, and is applied by introducing into the urethral canal a slender bougie containing a metallic conductor terminating in an olive tip which is brought in contact with the sphincter. A feeble current is used and kept up for several minutes, and the operation is repeated daily. Decided improvement is obtained after several days.

The author reports encouraging success with this treatment, especially in seven cases which had resisted all the usual medicaments. Among these patients a little girl was cured quite rapidly. This case is emphasized, because the efficacy of local treatment in the female has been denied. Six of the patients had atony of the sphincter, the seventh had contracture of the sphincter. All were cured rapidly.

Tumor of the Orbit in a Newborn Child.

Couraut (*Centralblatt f. Gynäkologie*, 1893, No. 32, p. 141) reports a rare instance of dermoid tumor of the orbit causing exophthalmos at birth. The infant was the sixth child of a woman whose antecedents could not be ascertained. Immediately after birth the left eye was observed to be markedly displaced forward by a mass which seemed to fill the entire orbit. The circumference of the tumor measured anteriorly 14.5 centimetres; its height was 3 and length 4 centimetres; the lids were separated 2.75 centimetres. The next day the tumor was enucleated with the eye; it contained connective, muscular, osseous, and cartilaginous tissue, mucous and sebaceous glands, hairs, etc. The child made a good recovery.

An Ascaris in an Infant of Three Weeks.

Miller (*Jahrbuch f. Kinderheilkunde*, 1893, Band xxxvi., p. 39) records an interesting case of a newborn infant in which, after the fall of the cord, umbilical suppuration occurred, leading to perforation of the intestine. From the fistula thus formed a lumbricoid worm was discharged. The child later succumbed to pneumonia. The chief interest in the case lies in determining the method of entrance of the egg of the parasite. As the child was nourished at the breast from the time of its admission to the hospital on the third day after birth, it is most probable that infection occurred during the first three days of life, possibly by means of water used to dilute cow's milk for its feeding.

Another striking fact is the rapid development of the worm, which, at the time of its exit through the umbilical fistula, measured 18 centimetres in length. According to Leuckart the ascaris attains this size only after three or four months. The part played by the parasite in the production of the intestinal fistula is also a question of interest. Authorities are divided upon the point whether ascarides are able to perforate the intestinal walls. Mondière, Leroux, Siebold, and Leuckart affirm this to be possible, while Rokitansky, Küchenmeister, Lebert, Bremser, and Rudolphi are as positive on the opposite side.

In the case reported, the author does not admit the possibility of such perforation, believing that the parasite came from the bowel by the fistula

already formed: after the fall of the cord there occurred at first an abscess, then gangrene of the umbilicus, which by extension to the intestine, already attached by inflammatory adhesions, produced the perforation and subsequent fistula.

Cachexie Pachydermique (Myxœdema) without Idiocy in a Child.

Marfan and Guinon (*Revue mensuelle des Maladies de l'Enfance*, November, 1893, p. 481) record the history and very complete autopsy of a case of myxœdema in a boy thirteen years of age, traceable back to the seventh year, after an attack of measles and submaxillary abscess. The case is interesting for the absence of idiocy. All of the cases cited in the collection of Bourneville were more or less idiotic; and in the more recently reported experiments of Rehn and Hoffmann (Twelfth Congress of Internal Medicine, Wiesbaden, 1893), with reference to the employment of thyroid extract, the existence of idiocy in the childish patients does not seem to be noted. The intellectual peculiarities of the patient of the authors consisted only in slowness of ideation and feebleness of memory—characteristics quite identical with those observed in the spontaneous myxœdema of adults; whence it seems proven that this latter variety of the disease may occur as well in children as in adults.

The arrest of physical development is appreciable in the following conditions: at thirteen years the height was one metre (about that of a boy of seven years); the genital organs were very little developed, and the milk-teeth were still present, with four of the large molars.

Among the hereditary antecedents, alcoholism in the father and consanguinity in the parents (first cousins) were noted. In addition to the well-known characteristics of the disease, the child was affected with marked dyspnœa and cyanosis of lips and ears, which increased in intensity till death, a week after admission to the hospital.

At the autopsy the thyroid was found to be almost completely atrophied. Among other lesions most carefully described, that of the larynx deserves mention. There was a pachydermic infiltration of the mucous membrane of the larynx, most marked at the aryteno-epiglottic folds. These formed two thick cords, which notably contracted the superior opening of the larynx. Microscopic examination showed that this swelling was due, like that of the integument, to an accumulation of fatty tissue in the submucous layer. This lesion explains the marked dyspnœa noted in this case in the last few days of life. Subjects of pachydermic cachexia, as a rule, show a slight dyspnœa and cyanosis, but in the present case the respiratory disturbance played a predominant rôle, the dyspnœa without modification of the voice resembling that observed in œdema of the glottis. The effects of this stenosis of the larynx were more rapid and fatal from the coexistence of a certain degree of vacuolar degeneration of the fibres of the heart-muscle.

The Opium Habit in Children.

Under this title Louis Fischer (*Medical Record*, February 17, 1894, p. 197) reports four cases in detail, out of a total of twenty-two observed, and

draws attention to the complex of symptoms in children caused by what should be more correctly classed as chronic opium poisoning. The drug had usually been administered as enemata of starch water and laudanum, or as paregoric, and the use of it had been begun during an acute illness, usually of diarrhœal character, or had been carried on by mother or nurse for purposes of allaying restlessness and irritability. Three of the cases died despite the most careful treatment and nursing. The author believes that many cases which die, especially in summer, and which are diagnosticated and treated as cases of marasmus, atrophy, athrepsia, or general debility, are possibly cases of opium poisoning simulating these diseases. The symptoms noticed as almost constant were: Diarrhœa, very severe at times, watery, foul-smelling, rarely containing blood, except where severe tenesmus existed; vomiting occasionally, but not a constant factor; anorexia in all cases. Insomnia in all cases. Urine scanty, frequently albuminous, in some very concentrated, containing an excess of phosphates; incontinence of urine frequent. The skin in the beginning normal, rarely pigmented; diaphoresis occasionally. Icterus always late in course. Reflexes very much exaggerated at times; no reaction at other times. Constant irritability, nervousness, and restlessness. The pulse usually full, slow, regular, in beginning 68 to 79; later, very much accelerated and irregular, 140 to 146; heart's action corresponding with pulse, sounds distinct at all times. Respiration deep, slow, at times 18 to 24 in the beginning, 28 to 62 and higher in the later stages. Stupor almost constant, at times coma, but patient could be roused easily and spoke coherently. Itching or formication of skin very probable, judging by the continued scratching and eczematous eruptions found over most of the body, more especially the arms and legs.

The drugs that served best in the sudden or gradual weaning from opium were sulfonal, to promote sleep and overcome restlessness; monobromated camphor (0.2 to 0.5 gm.), followed by 0.5 to 1.0 gm. sulfonal, bromide of potassium and chloral. Hot baths at night and lupuline. Chloralamid, 0.5 to 1.0 gm., at night, was also efficient. Nutrient enemata of starch, wine, egg, and beef-tea and brandy. Several of the cases that recovered are still under observation, but show no symptoms except irritability and nervous twitchings resembling chorea, and in one case persistent albuminuria.

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